DVD player

DVP3680

Service
Service
Service

Service Manual

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CLASS 1
LASER PRODUCT

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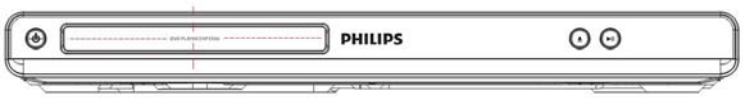
3141 785 36890

Version 1.0

PHILIPS

1. EPICTION



DESCRIPTION	Pos
DVD door	
Open /Close button	
Play/Pause	
Power button	
Power and play indicator	
Remote IR Sensor	

CABINET			
Dimensions (L x W x H):	TBA	Material: Refer to Cosmetic Specification	
		Finishing: Refer to MUS specification	
Bear unit weight (kg)	TBA		

	Main set	*Connector type*		
	CVBS &YUV OUTPUT X 1	RCA4 x1		
	L/R OUTPUT X 1	RCA 2x1		
	COAXIAL OUTPUT X 1	RCA x1		
	HDMI OUTPU X 1	HDMI x1		

2. ACCESSORIES

1) Warranty Card
2) Remote Control w/battery x1,
3) User Manual,
4) AV cable

3. General Description

DVD player
Key Components:
Optical Pickup: S76RFXP2 (IM)
Chip set/Solution: MT1389DXE-G
Disc Size: 8cm/12cm
Playable disc type: DVD/DVD+RW/DVD+R/CD/CD-R/CD-RW / DVD-R/-RW
Video output signal: PAL/AUTO/NTSC (output only, with Macrovision)
Video format: DVD / VCD / SVCD / JPEG /
Audio format: CD/MP3, MP3-DVD, Dobly digital (down mix), WMA
User Interface:
OSD language: Russian/English/ Ukrainian for 51 version
English,Trad-Chinese, Beharsa Melayu. Thai, Korean for 98 version
Eng, Simplified-Chinese for 93version
Eng, Trad-Chinese, Malay, for 96 version
(Detail, refer to UI requirement)
Screen Saver function.
Button functions: Refer to MUS.
Standby power: <0.5W

Picture Quality: refer to DVP3500K/98 (NO VIDEO BUFFER)

Sound Quality: refer to DVP3500K/98 (NO OUTSIDE 2CH AUDIO DA)

Lifetime : 3 years (min.)

Temperature & Humidity:
Operating Temperature & Humidity
0-50 deg C / 30-90%; Charging Temperature: 0 - +40 degC
Storage Temperature & Humidity
-20-70 deg C / 30-95%
Climatic requirements, Indoor product

Weight:
TBC Kg +/- 30% with / battery / AV cable / IFU / GB

Version	Region	Countries	Voltage	Frequency	AC Cord Type
51	5	**Russia** / Ukraine	230V	50Hz	VDE 2-pins round
93	6	**China**	110V- 240V	50Hz,60Hz	CCC flat 2-pin
96	3	**Taiwan**	110V- 240V	50Hz,60Hz	Taiwan Plug (CNS 690 approved)
98	3	**Asia**	110V- 240V	50Hz,60Hz	VDE 2-pins round

4. Safety requirements

CB approval
DVP3600
IEC60065:2001 + A1:2005 & EN60065:2002 + A1:2006,
(LVD directive 2006/95/EC)

5. EMC requirements

– Active Radiation, Radiation Immunity, Conductive Interference
DVP3600
EN55013: 2001 +A1:2003 + A2:2006
EN55020: 2007
EN61000-3-2: 2006
EN61000-3-3: 1995 + A1: 2001 + A2:2005
(EMC directive 2004/108/EC)

6. EUP test

IEC62301: 2005 1st edition
(commission regulation (EC) No 1275/2008)
(EUP directive 2005/32/EC)

7. Power-Supply

AC Power	Typical	Limit	*Remarks*
Power Supply voltage	100- 240V	+/- 10%	
Supply Power consumption	10W	+40%/ - 0%	
Standby Power (power switch OFF)	-	<0.5W	

8. Audio (all test with 22k Ohm load unless specified)

DVD-Audio Line out	Condition	Typical	Limit	
1. Output voltage 1kHz (V)		2Vrms	+/- 1dB	Apply 8 ohm loading no component damage
2. THD 20-20kHz		0.03%	0.06%	
3. Dynamic range	1kHz		>85dB	
4. A-weighted S/N ratio	Tr15/Tr49		>90dB	
5. Frequency response	20-20kHz	-	+1 / -0.5dB	
6. Channel separation	1kHz	-	>=85dB	
7. Channel balance	1kHz		+/- 1dB	

Digital output

Coaxial

Type	Standard
CDDA/LPCM (including MPEG1)	IEC60958
MPEG2, Dolby Digital (AC-3)	IEC61937
DTS, 96kHz 24 bit	

9. Video Output

AV output ports special requirement	>10V DC	No component damaged
Connection Port Impedance	75 ohm	

CVBS Video Output (PAL / NTSC)

DVD-Video composite	Condition	Typical	Limit	
1. White Bar	-	714mVpp	+10/-20	

2. Sync. Amplitude	-	286mVpp	+/-40	
3. Amplitude o/p	-	1000mVpp	+10/-20	
4. Burst amplitude	-	286mVpp	+1/-4	
5. Burst/chroma ratio	-	-	+/-10	
6. S/N luminance	Un-weighted	-	>55	
7. S/N chroma (AM)	Un-weighted	-	>55	
8. S/N chroma (PM)	Un-weighted	-	>52	
9. Video bandwidth	-	PAL/8MHz	-7	
10 Chroma/Luminance			<100	
11 Sub-carrier frequency (Chroma) (ppm)	-	4.43361875MHz / PAL 3.579545MHz / NTSC	+/-30	
12 Subcarrier locked / unlocked	-	-	Locked	

10. YUV Video Output

Description	Test Signal	Specification		Class achievement	
		NTSC	PAL	NTSC	PAL
Y White level	100% White	714 mVpp +/- 10%	700 mVpp +/- 10%		
Sync.amplitude	100% White	286 mVpp +/- 40mV	300 mVpp +30mV / -50mV		
U amplitude o/p	75% color bar (T2 C1)	286mV ± 40mV	300mV ± 50mV		
V amplitude o/p	75% Colour bar	525mV ± 10%	525mV ± 10%		
S/N on outputs: U V	100% red (T2 C17)	≥55 dB＊	≥55 dB		
Video Bandwidth (0.5MHz-10MHz)	Multi-burst	+1dB/-6dB	+1dB/-6dB		
multi-burst (T2 C9)	video amplitude	Ref. 0dB 90.8 IRE			
	0.5MHz	+1dB / -1dB	+1dB / -1dB		
	1.0MHz	+1dB / -1dB	+1dB / -1dB		
	2.0MHz	+1dB / -2dB	+1dB / -2dB		
	4.0MHz	+1dB / -3dB	+1dB / -3dB		
	4.8MHz	+1dB / -5dB	+1dB / -5dB		
	5.8MHz	+1dB / -10dB	+1dB / -10dB		

View test: For both NTSC and PAL a viewing test is necessary to determine any annoying phenomena which can not be determined by standard video measuring procedures. In case of the doubt, the viewing test is decisive

11. Miscellaneous Electrical

1. EMC for EURO	EMC	-	4dB	Below Limit
2. ESD test(UAN-D1724)	<= 8kV	-	Ok	No abnormal allowed
	<= 15KV	-	Ok	No component damage
3. Mains spike	+/-1500V	-	Ok	
4. Mains failure	100% mains drop	-	Ok	Refer to CTQ
5. Laser beam shut off when the CD door open	-	-	Ok	

Auto Power Off	Con	Typical	Limit	

Screen saver	-	20	+/-30%	After push / disc stop
Power off –stand by	-	20	+/-30%-	After Screen saver functional

IR remote	Condition	Typical	Limit	
Max. operating	<= +/- 45°	-	5	(M)
(degree)	<= +/- 30°	-	7	(M)
	0°	-	10	(M)
Quiescent Current		-	<1uA	
Operating Voltage		2.3 - 3.5V		
Operating Current		9 – 16mA		
Carrier Frequency		36KHz	+/- 2%	
Battery Storage Time		? Year		Temperature:
Battery Life Time	After 20 hours continuous sending (2s/time), IR power should be at least 20μW/cm^2			

Audio/ Video Characteristic Testing discs	
Manufacturer	Disc name
1) TOSHIBA	TSD-4
2) DOLBY	Test disc
3) ABEX	TDV-540A
4) SONY	Test CD Type 4

12. Playability Requirement (See attached in last page).

DISC Playability (details refer to Playability Test Plan)

DVD Video playability	Condition	Typical	Limit		
1. Scratch	-	-	<=1.6	ABEX TDV-541	
2. Black dot	-	-	NA	ABEX TDV-545	
3. Fingerprint	-	-	NA	ABEX TDV-545	
4. Non-Centre	-	-	NA	ABEX TDV-552	
5. Vertical deviation disc	-	-	NA	ABEX TDV-562	

DVD+ RW Video playability	Condition	Typical	Limit		
Normal playback			OK	Philips HAC11	
Black dot			0.8	Philips HAC11	
Fingerprint			OK	Philips HAC11	
Philips marginal DVD-9			OK	Philips LVP12.01 – layer 0 Philips LVP12.02 – Layer 1	

CD playability	Condition	Typical	Limit		
Abex-TCD732RA(VDD)	Track 15		OK		
Abex-TCD713(ECC 210um)			NA		

Power On / Off Disturbances

> -52 dB suppression of the disturbance with regard to the rated output voltage.
The peak level has to be measured according to IEC 60651 weighted (A) curve.

13. Mechanical Specification (Refer PQR or PQP)

14. Critical component

Description	Manufacturer	Model no. Version
DVD Chip set	MTK	MT1389QE/DE/DXE-J
Laser pick up	IM	S76RFXP2
Remote Control	TianZeHuan	T47
Power IC	Infineon	ICE3B0565J
LOADER	KeQin	RT-628
Motor Driver IC	SEMICO	CD588CB
FLASH(16M)	EON/MX	EN25QH16-104HIP/MX25L1606EM2I-12G
SDRAM(4M X16BIT)	MIRA/ETRON/ESMT	EM638165TS-6G/M12L64164A-7TG/AT

15. Cosmetic Specification

All cosmetic color please refer Philips MUS color specification

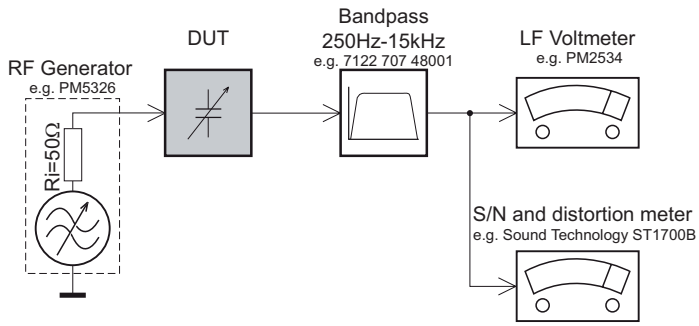
No.	Part Description	Texture	Finishing	Color	Remarks

16. Change History

Version	Date	Description	by
1.0	2011-07-19	initial	Wang S.F

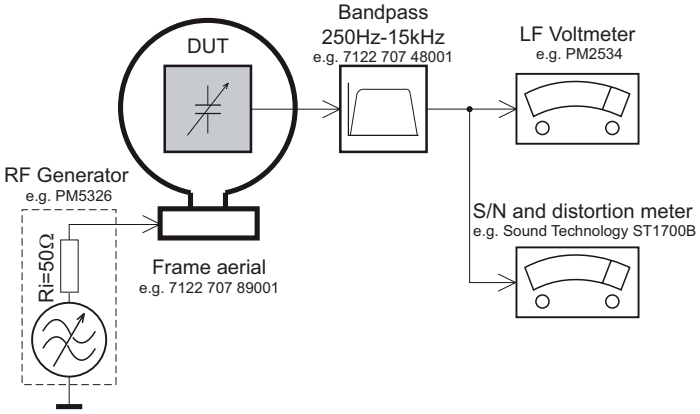
MEASUREMENT SETUP

Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

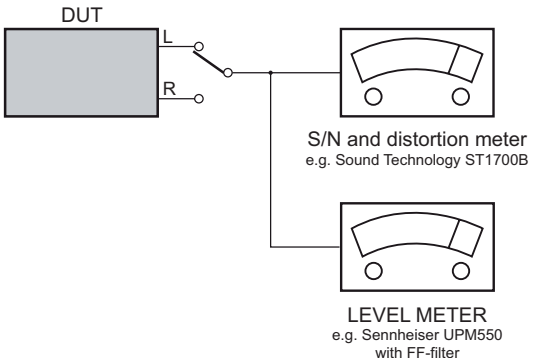
Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

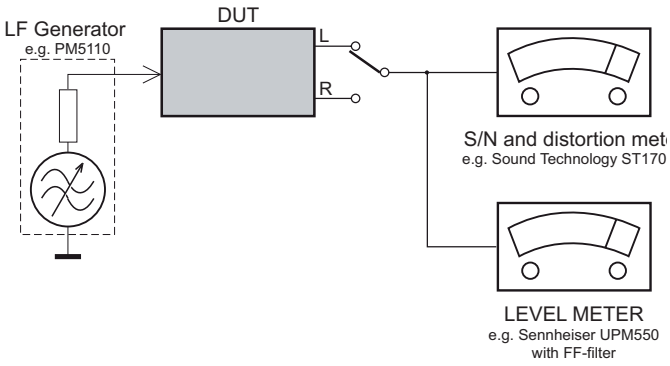
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)

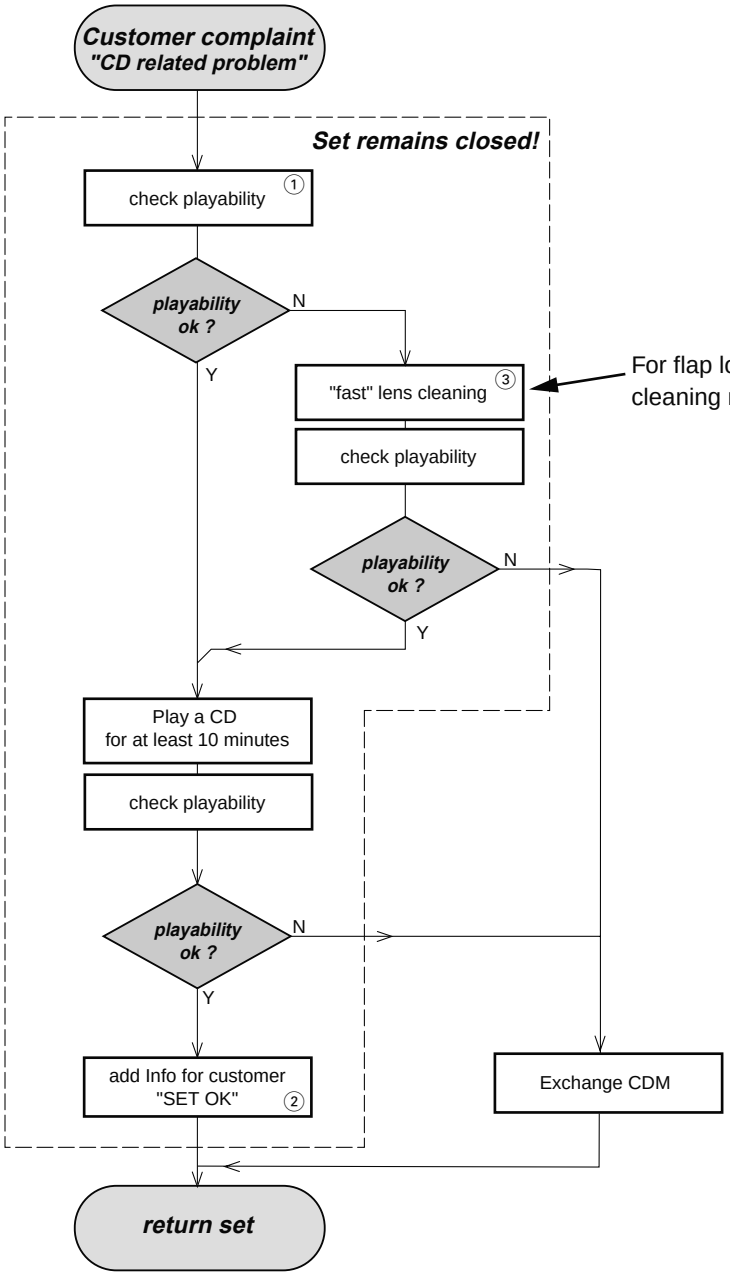


Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071



INSTRUCTIONS ON CD PLAYABILITY



① - ④ For description - see following pages

INSTRUCTIONS ON CD PLAYABILITY

(1)

PLAYABILITY CHECK

For sets which are compatible with **CD-RW** discs
use CD-RW Printed Audio Disc 7104 099 96611
TR 3 (Fingerprint)
TR 8 (600µ Black dot) **maximum at 01:00**

- playback of these two tracks without audible disturbance
  playing time for: Fingerprint ≥10seconds
  Black dot from 00:50 to 01:10
- jump forward/backward (search) within a reasonable time

For all other sets
use CD-DA SBC 444A.....4822 397 30245
TR 14 (600µ Black dot) **maximum at 01:15**
TR 19 (Fingerprint)
TR 10 (1000µ wedge)

- playback of all these tracks without audible disturbance
  playing time for: 1000µ wedge ≥10seconds
  Fingerprint ≥10seconds
  Black dot from 01:05 to 01:25
- jump forward/backward (search) within a reasonable time

(2)

CUSTOMER INFORMATION

It is proposed to add an addendum sheet to the set which informs the customer that the set has been checked carefully - but no fault was found.
The problem was obviously caused by a scratched, dirty or copy-protected CD. In case problems remain, the customer is requested to contact the workshop directly.
The lens cleaning (method (3)) should be mentioned in the addendum sheet.

The final wording in national language as well as the printing is under responsibility of the Regional Service Organizations.

(4)

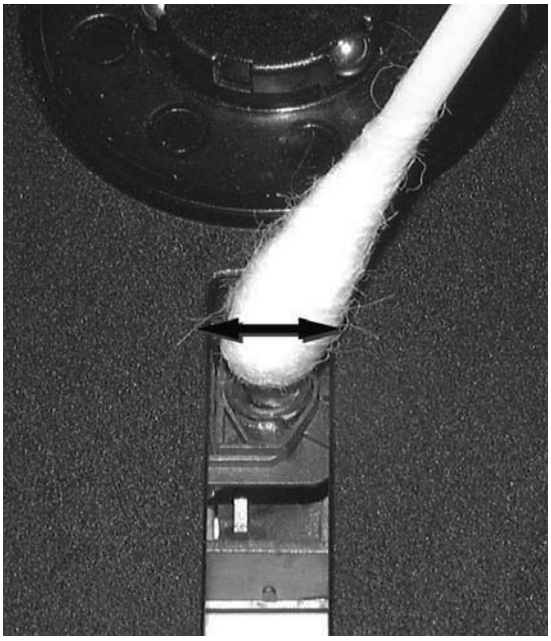
LIQUID LENS CLEANING

Before touching the lens it is advised to clean the surface of the lens by blowing clean air over it. This to avoid that little particles make scratches on the lens.

Because the material of the lens is synthetic and coated with a special anti-reflectivity layer, cleaning must be done with a non-aggressive cleaning fluid. It is advised to use “Cleaning Solvent

The actuator is a very precise mechanical component and may not be damaged in order to guarantee its full function. Clean the lens gently (don’t press too hard) with a soft and clean cotton bud moistened with the special lens cleaner.

The direction of cleaning must be in the way as indicated in the picture below.



2.0 SAFTETY INSTRUCTIONS

(GB) WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

ESD

(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

(F)
Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utiliséés les piéces de rechange identiques à celles spécifiées.

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

(I)
Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

(GB) Warning !

Invisible laser radiation when open.
Avoid direct exposure to beam.

(S) Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(SF) Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

DK Advarse !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

Caution: These servicing instructions are for use by qualified service personnel only.
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

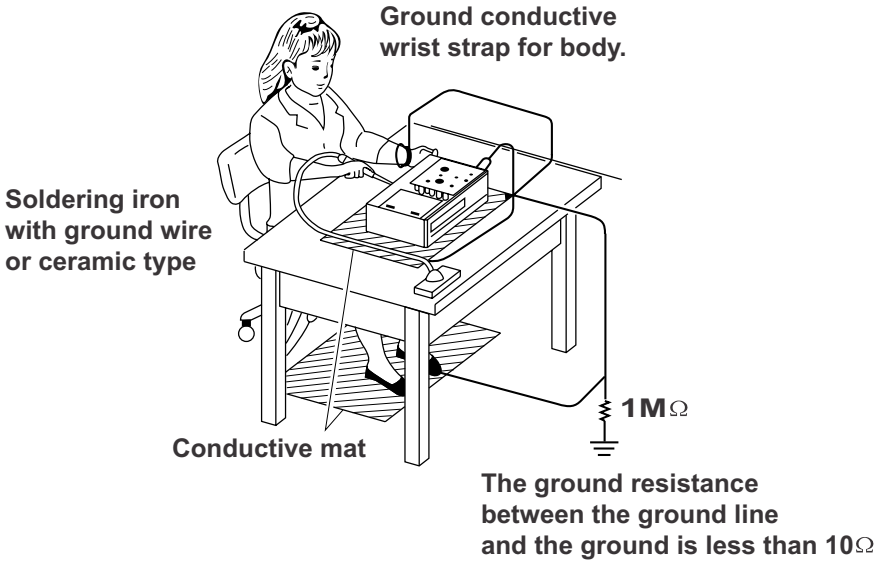
2.1 ESD PROTECTION

- レンズには絶対に触れないでください。
- DO NOT TOUCH THE LENS.
- LINSE NICHT BRÜHREN.
- NE PAS TOUCHER LA LENTILLE.

When the power supply is being turned on, you may not remove this laser cautions label. If it removes, radiation of laser may be received.

PREPARATION OF SERVICING

Pickup Head consists of a laser diode that is very susceptible to external static electrocity.
Although it operates properly after replacement, if it was subject to electrostatic discharge during replacement, its life might be shortened. When replacing, use a conductive mat, soldering iron with ground wire,etc. to protect the laser diode form damage by static electricity.
And also, the LSI and IC are same as above.



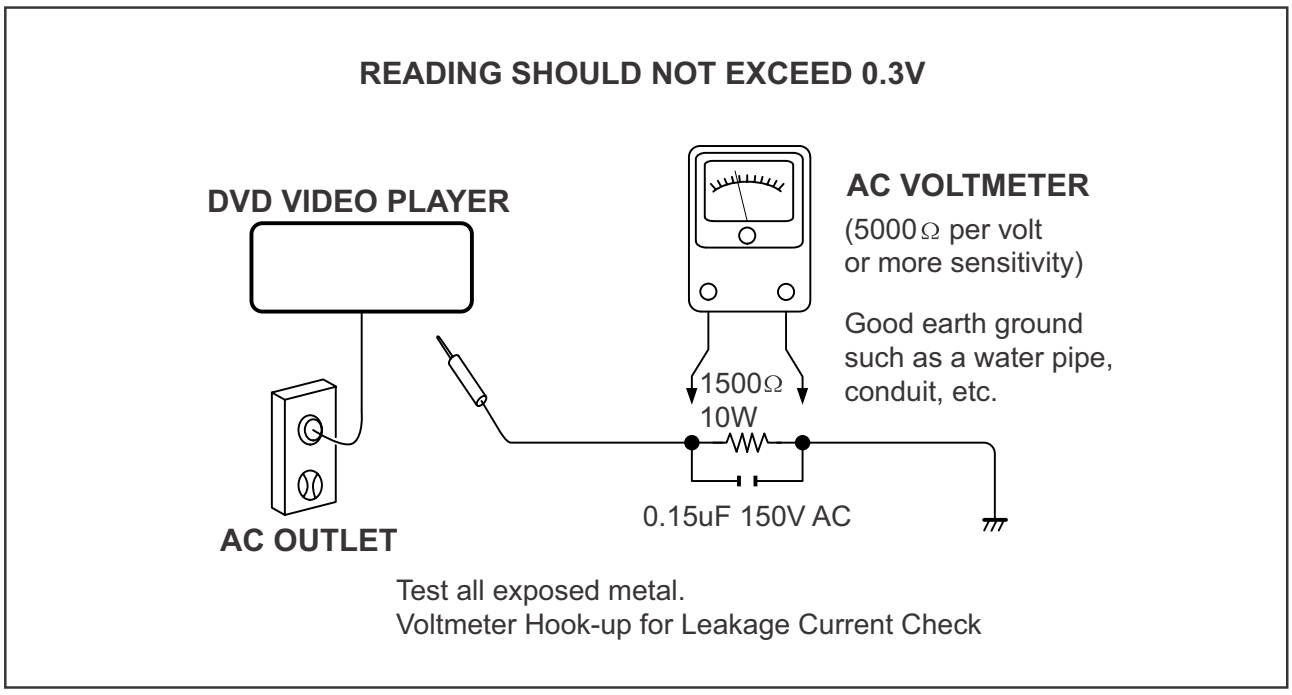
SAFTY NOTICE

SAFTY PRECAUTIONS

LEAKAGE CURRENT CHECK

Plug the AC line cord directly into a 120V AC outlet (do not use an isolation transformer for this check). Use an AC voltmeter, having 5000Ω per volt or more sensitivity. Connect a 1500Ω 10W resistor,paralleled by a 0.15uF 150V AC capacitor between a knomn good earth ground (water pipe, conduit, etc.) and all exposed metal parts of cabinet (antennas, handle bracket, metal cabinet screwheads, metal overlays, control shafts, etc.).

Measure the AC voltage across the 1500Ω resistor. The test must be conducted with the AC switch on and then repeated with the AC switch off. The AC voltage indicated by the meter may not exceed 0.3V.A reading exceeding 0.3V indicates that a dangerous potential exists, the fault must be located and corrected. Repeat the above test with the DVD VIDEO PLAYER power plug reversed.
NEVER RETURN A DVD VIDEO PLAYER TO THE CUSTOMER WITHOUT TAKING NECESSARY CORRECTIVE ACTION.



Test all exposed metal.
Voltmeter Hook-up for Leakage Current Check

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

2.2 SAFETY INSTRUCTIONS

Battery Handling Guideline

Since the battery is packed in soft package, to ensure its better performance, it's very important to carefully handle the battery

2.2.1 Soft Aluminium foil

The soft aluminum packing foil is very easily damaged by sharp edge parts such as Ni-tabs, pins and needles.

- Don't strike battery with any sharp edge parts
- Trim your nail or wear glove before taking battery
- Clean worktable to make sure no any sharp particle

2.2.2 Sealed edge

Sealing edge is very flimsy

- Don't bend or fold sealing edge

2.2.3 Folding edge

The folding edge is form in battery process and passed all hermetic test.

- Don't open or deform folding edge

2.2.4 Tabs

The battery tabs are not so stubborn especially for aluminum tab.

- Don't bend tab

2.2.5 Mechanical shock

- Don't Fall, hit, bend battery body

2.2.6 Short

Short terminals of battery is strictly prohibited, it may damage battery.

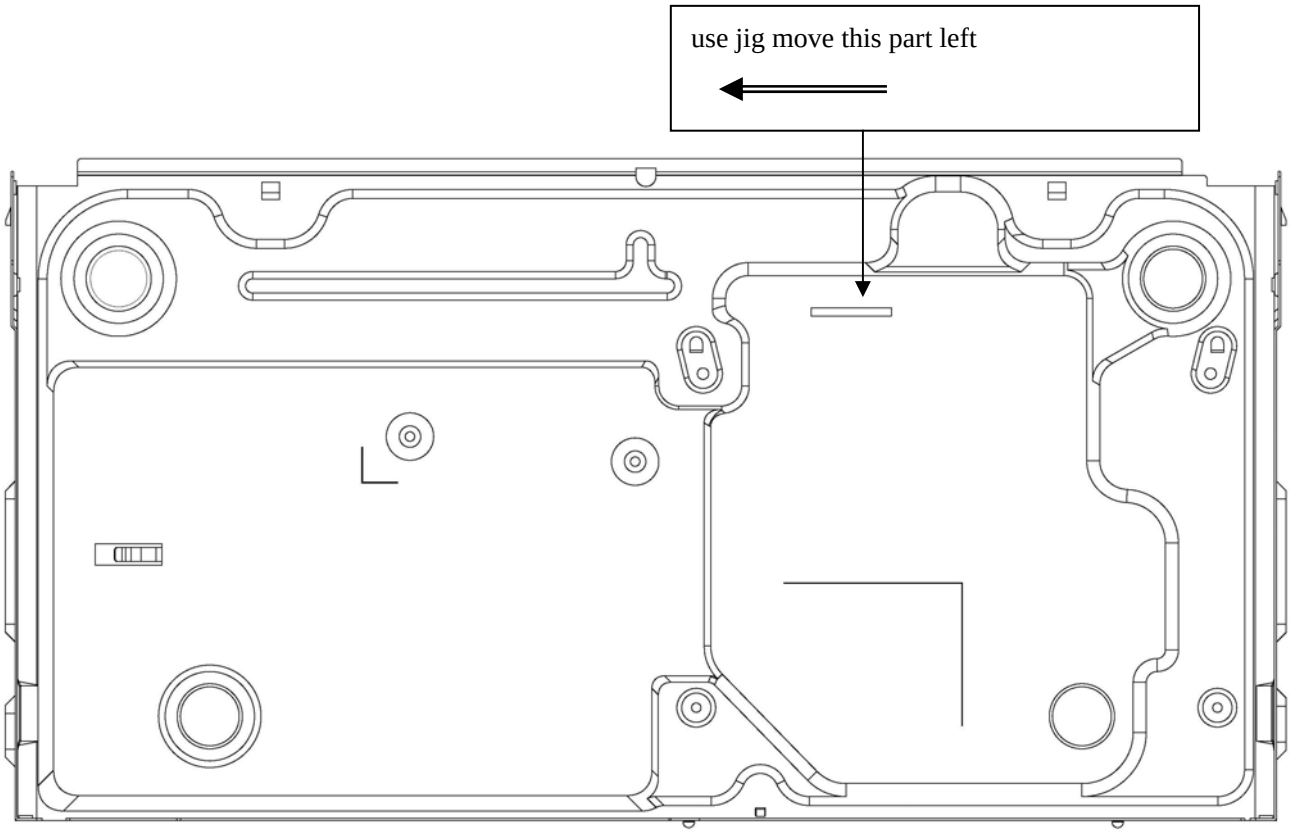
Caution: Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

How to remove the CD manually from the tray

1. Please do as below instruction in case the tray can not be open:

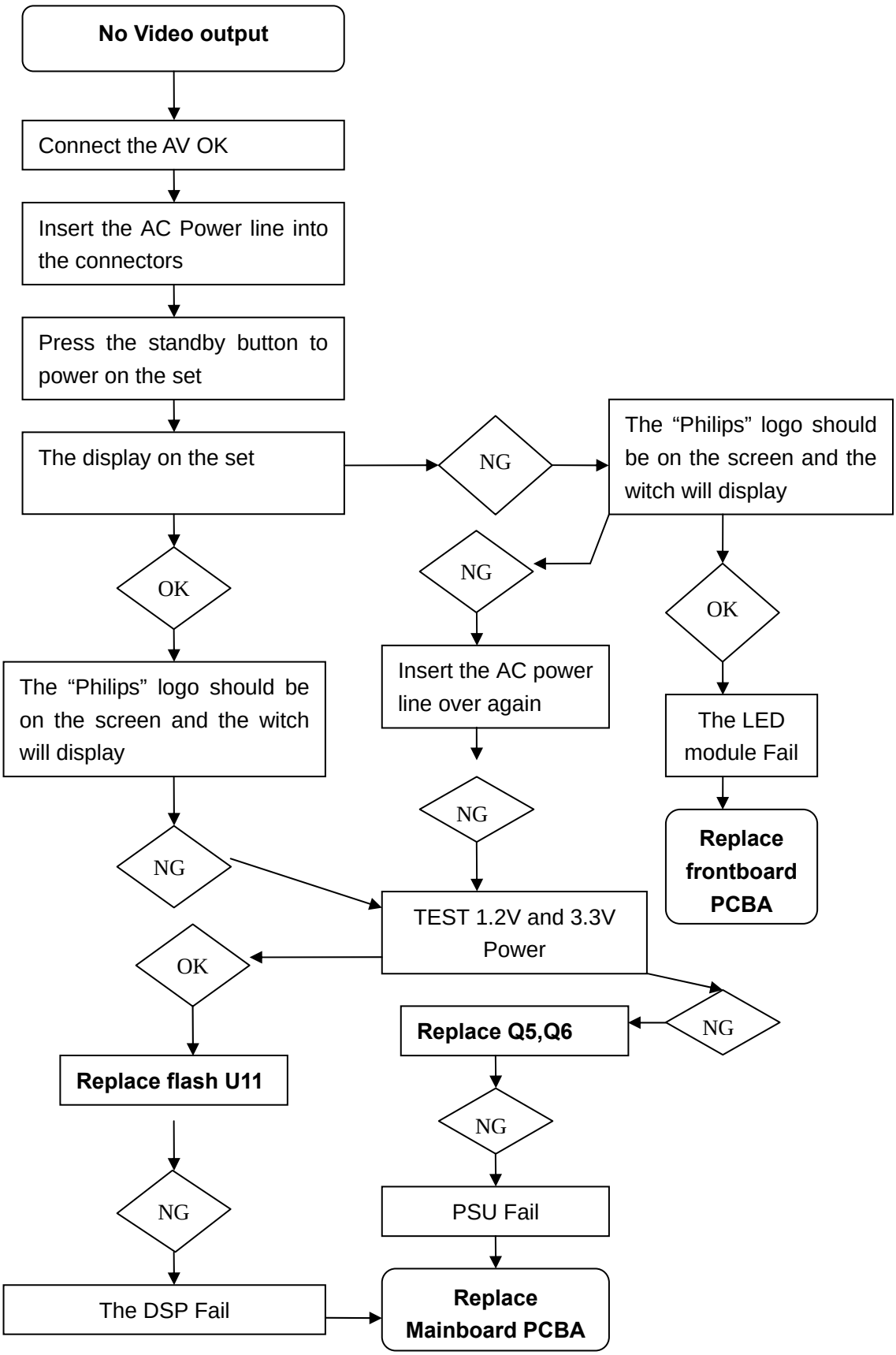
a. Power off the DVD player.

b. Please gently push the guider and wait until the tray comes out(Figure1).

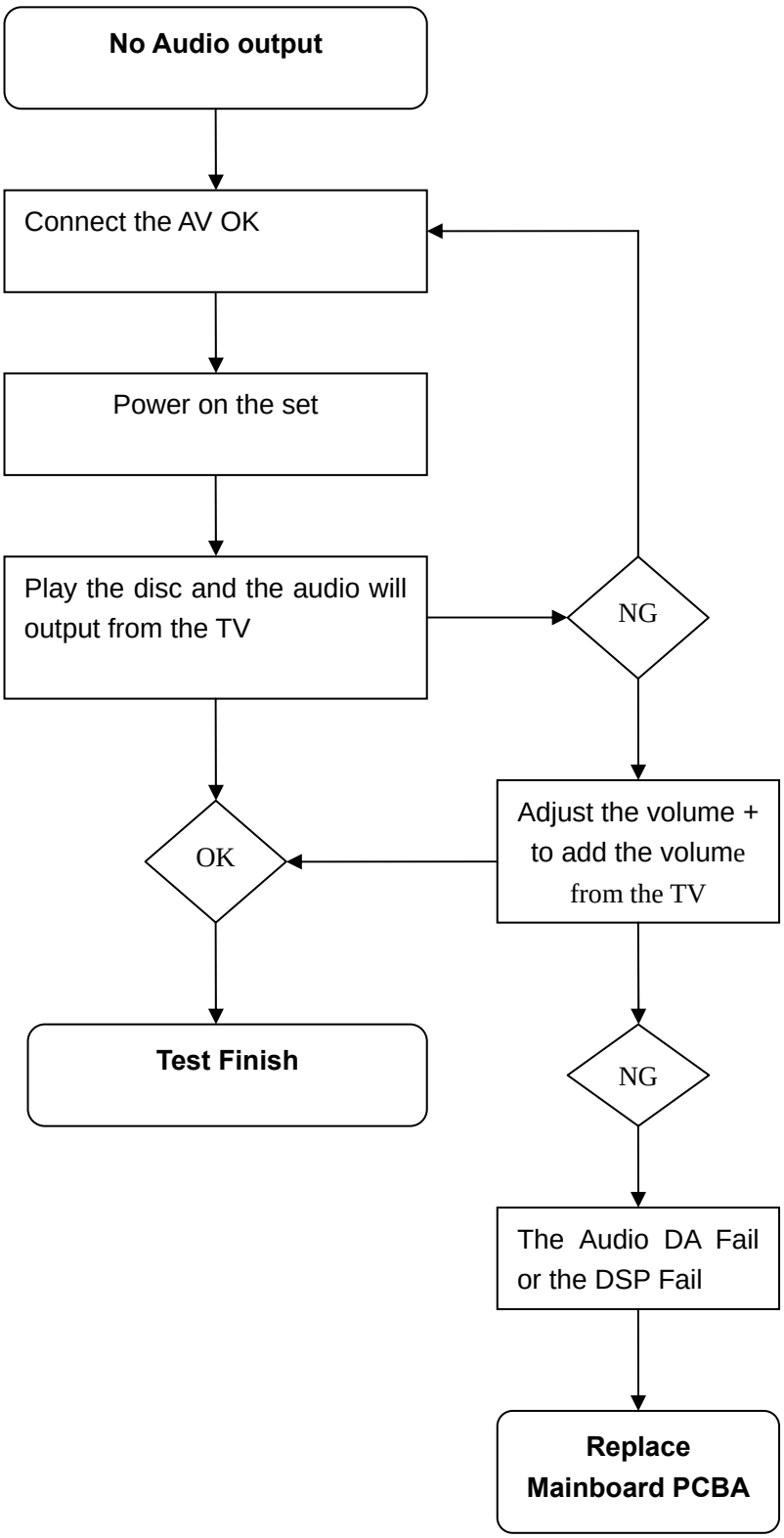


How to check the return Unit

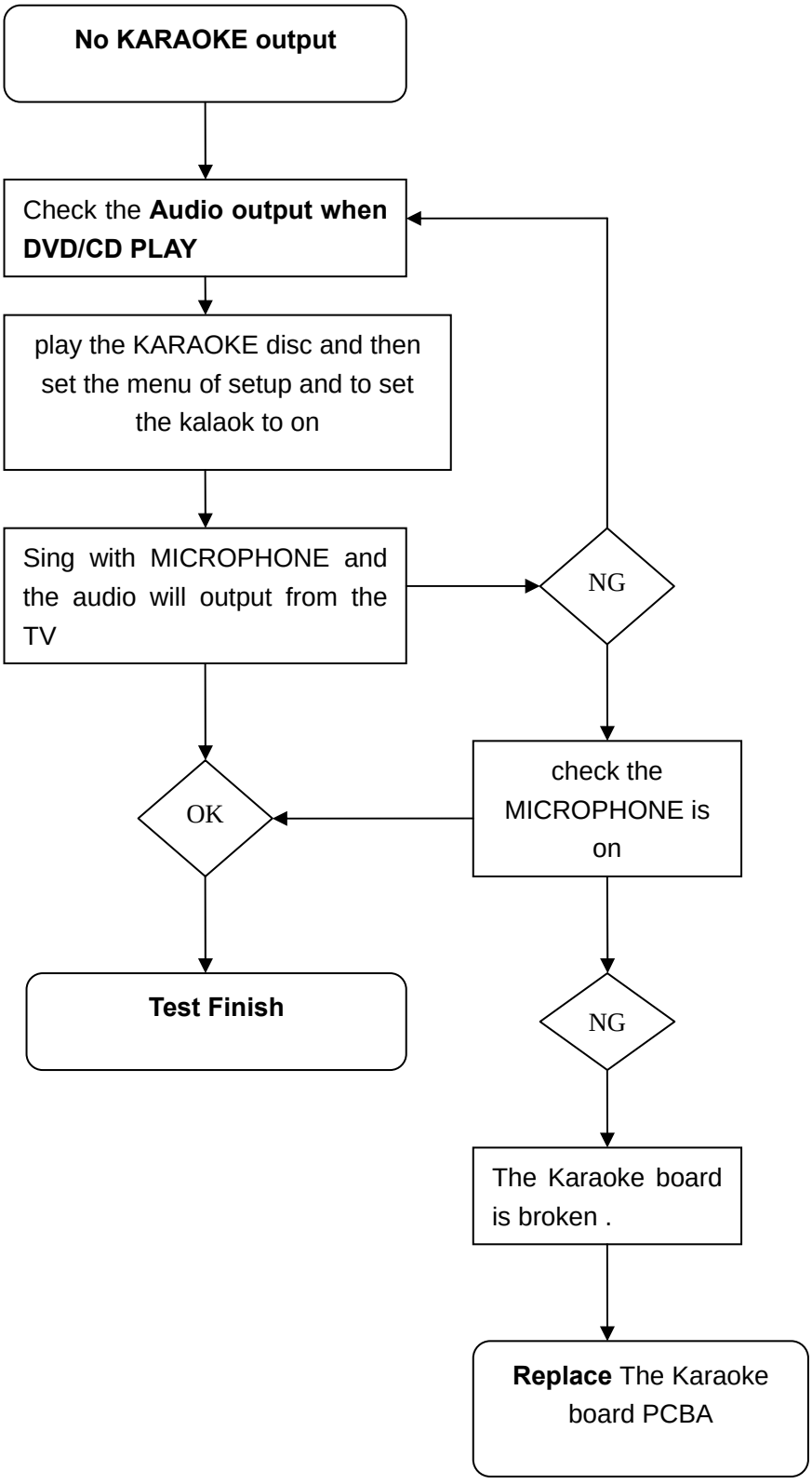
1, No Video output



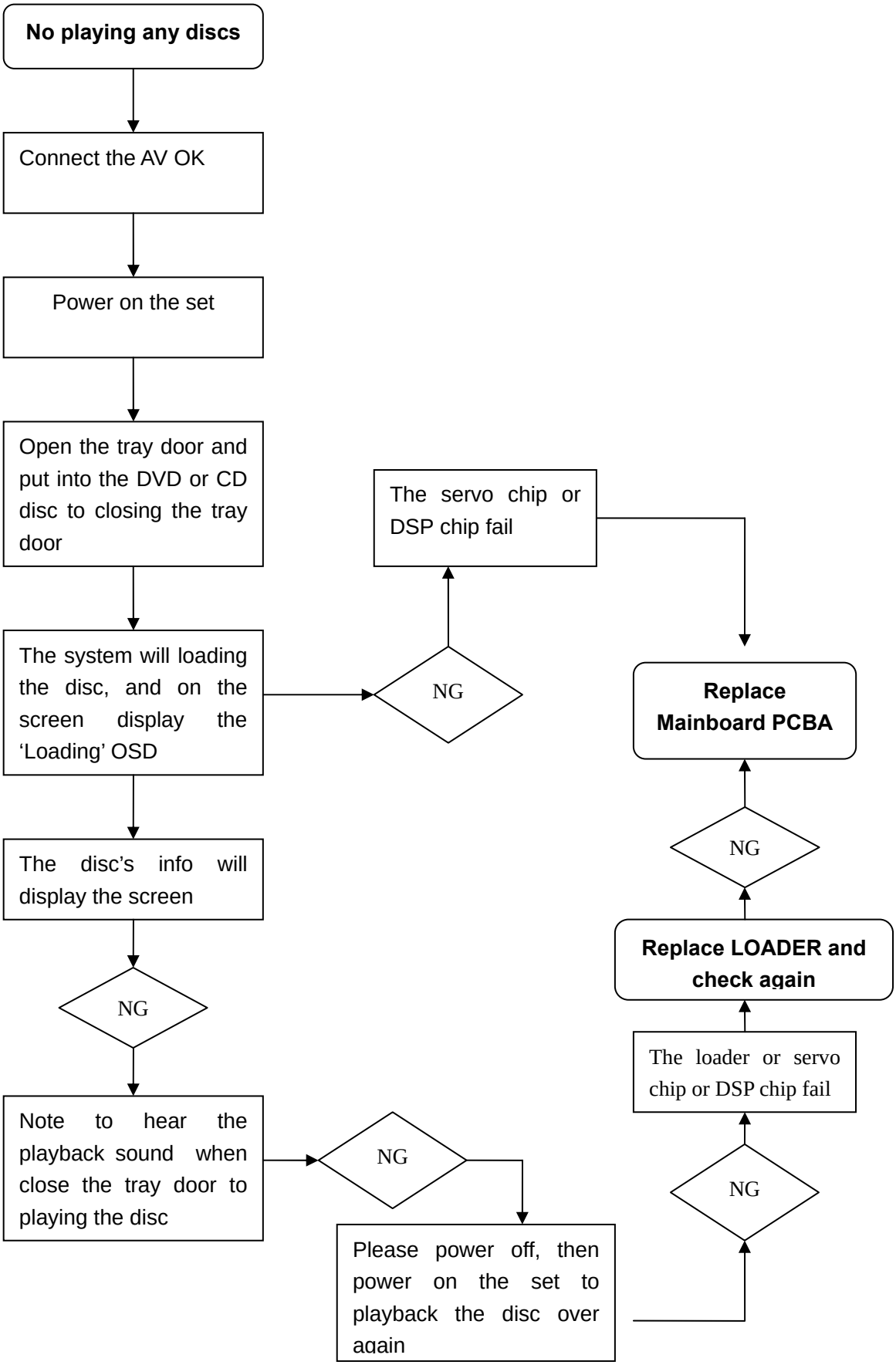
2, No Audio output


No Audio output
Connect the AV OK
Power on the set
Play the disc and the audio will output from the TV
NG
OK
Adjust the volume + to add the volume from the TV
Test Finish
NG
The Audio DA Fail or the DSP Fail
Replace Mainboard PCBA

3, No KARAOKE Audio output


No KARAOKE output
Check the Audio output when DVD/CD PLAY
play the KARAOKE disc and then set the menu of setup and to set the kalaok to on
Sing with MICROPHONE and the audio will output from the TV
NG
OK
check the MICROPHONE is on
Test Finish
NG
The Karaoke board is broken .
Replace The Karaoke board PCBA

4, No playing any discs


No playing any discs
Connect the AV OK
Power on the set
Open the tray door and put into the DVD or CD disc to closing the tray door
The system will loading the disc, and on the screen display the 'Loading' OSD
NG
The servo chip or DSP chip fail
Replace Mainboard PCBA
NG
Replace LOADER and check again
The loader or servo chip or DSP chip fail
NG
The disc's info will display the screen
NG
Note to hear the playback sound when close the tray door to playing the disc
NG
Please power off, then power on the set to playback the disc over again

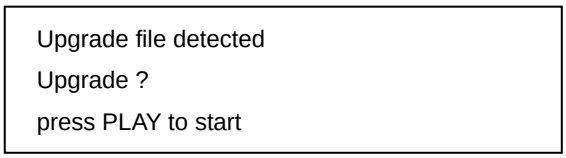
Software upgrade

1. Get the software firmware,the name must be **DVP36XX_XX.BIN**, and all character must be large.

   or press SETUP key on the RC,in " Preferences" menu can see the option of "Version info", Then, enter the Version info menu and you can see its upgrade file which shown of File Name

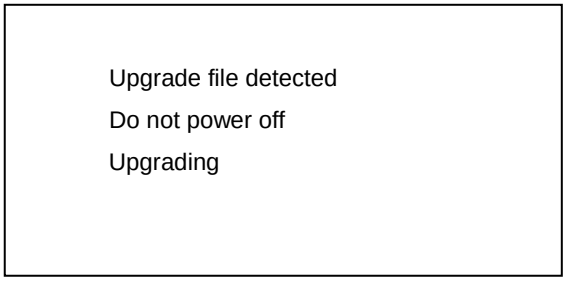
2. Copy the upgrade firmware onto CD disc.

3. Play the firmware CD disc,and the upgrade menu will appear.



4. First Select PLAY button and start to automatically upgrade on the first upgrade menu.

5. Then,the upgrade process will start and appear "Upgrading",please don't power off during this state.



6. During the updating, the tray door is openning,. when the update is complted, the unit will power off and then re-start automatically to close the tray door to play the current disc on the tray.

How to select the right language

(1) **How to change the OSD language**

First, press SETUP key on the RC,in " Gereral Setup" you can see the option of "OSD Language",

Then,press Right key to enter the osd language menu and select language which you want.

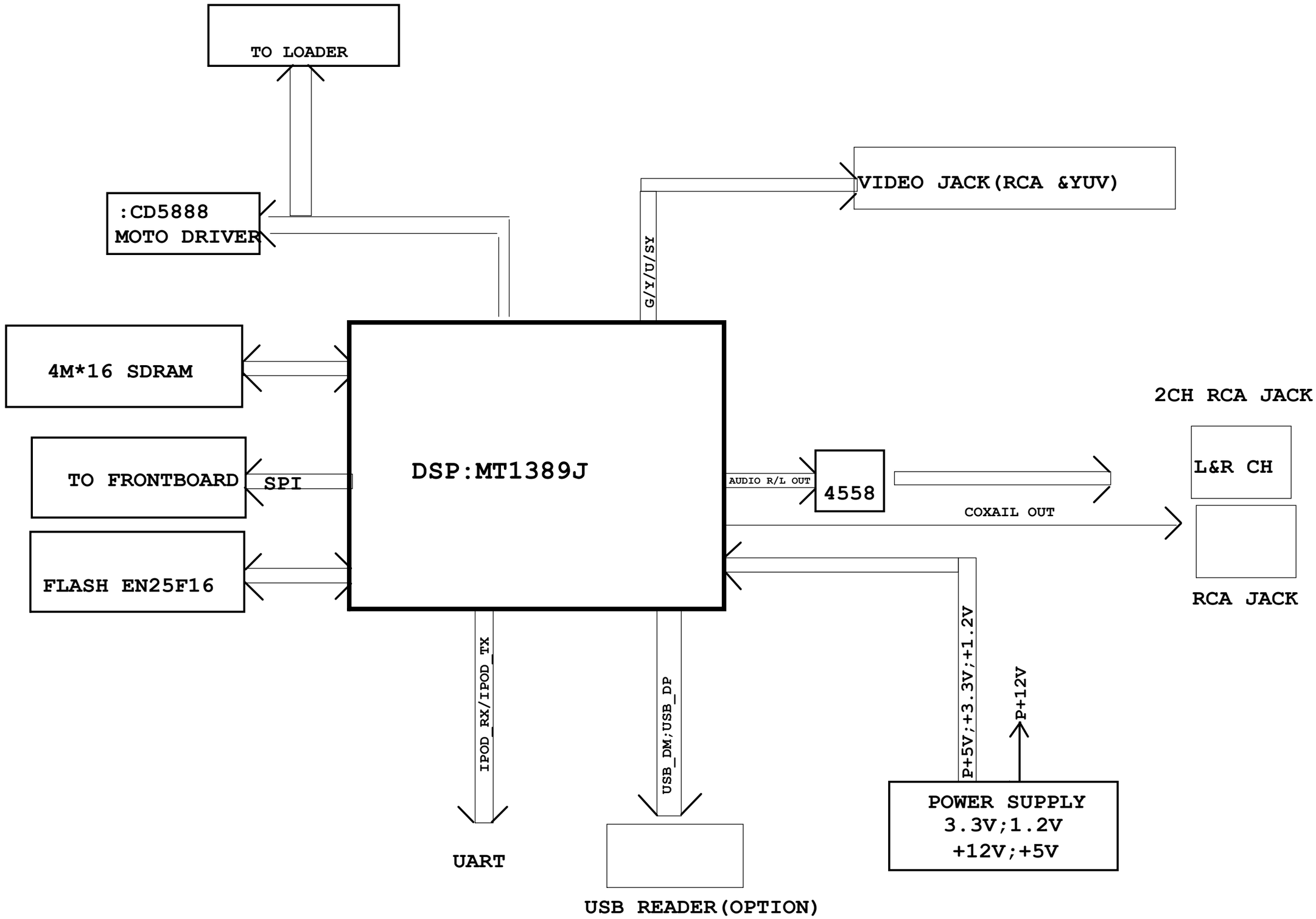
(2) **How to change the Audio default language**

First, press SETUP key on the RC,in " Preferences" menu can see the option of "Audio",

Then,press Right key to select Audio or subtitle language. which you want

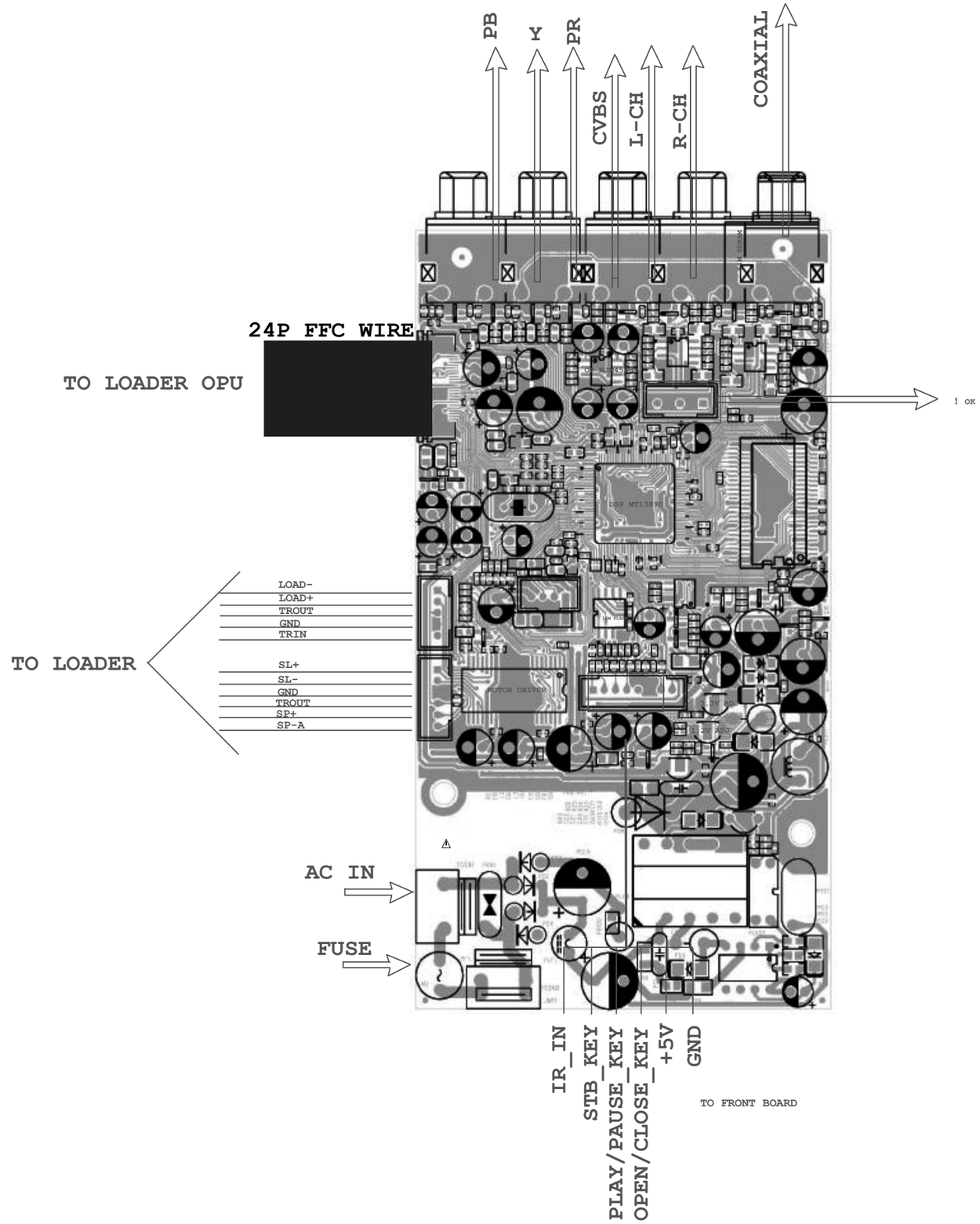
3- 1

BLOCK DIAGRAM



3- 2

SET WIRING DIAGRAM



AC100-240V INPUT

2.7Ω0.5W,AC250V

PCON4

PF2 2.7Ω-1/2W

PXC1

T103
UU9.8-40mH

PRK2

PD15

PD12

PD14

PD13

1N4007
1N4007
1N4007
1N4007

PLF2
1mH/100mA/6*8

PEC12
10uF/400V

PEC10
10uF/400V

PR12
100KΩ
RC1206

CAP-5-7.5X2.5
222/1KV
PC8

DIO-214AC

RC0805
100Ω
PR13

1N4007
PD16

FB117
50Ω

RD1W

T102

T1

PU2
ICE3B0365J
GND VCC N.C. Drain
SoftS FB CS Drain

PC7
1uF/25V
CC0805

PR14
1.5Ω
RC1206

PD9
1N4007

PR16
10Ω
RC0805

DIO-214AC

PEC11
22uF/35V
ECAP-2.5X5

ZY-T0103
TRAN10-EE199-4X13

PD10
RS1G-1A400V

P_12V

PEC9
100uF/25V

PC212
0.1uF/25V

VCC → VCC [2,3]

PR213
22Ω

PC215
102/100V

PD11
SR360

PL2 15uH/2A

VCC

PEC7
1000uF/16V

PC214
0.1uF/25V

PEC8
680uF/16V

PC213
0.1uF/25V

VCC

PU103

PD12
10V

PC6
1000PF/50V

PC817
DIP4-2.54X10

PR18 2KΩ
RC0402

PR11 2.2KΩ
RC0402

PR19
4.53KΩ 1%

PC9 0.1uF/25V
CC0402

PR17 4.7KΩ
RC0402

PC10
0.01uF/50V
CC0402

PD104

TL431

PR15
4.32KΩ 1%

AGND

GND

PYC2
1000PF/250V

Ajacent to relevant component demoting specific

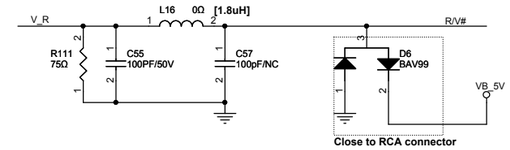
component shall be replaced only by the
component specitied in the circuit for safety reasons

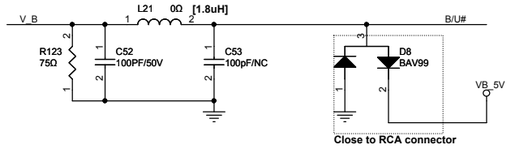
Note:Damage rquring service,unplug this produce
from the wall oulet and refer servicing

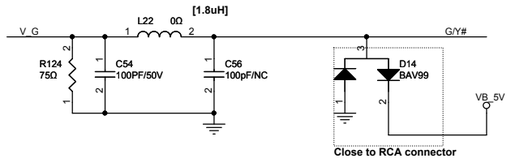
to qualifled service presonal when
replacement parts are required sure
the service

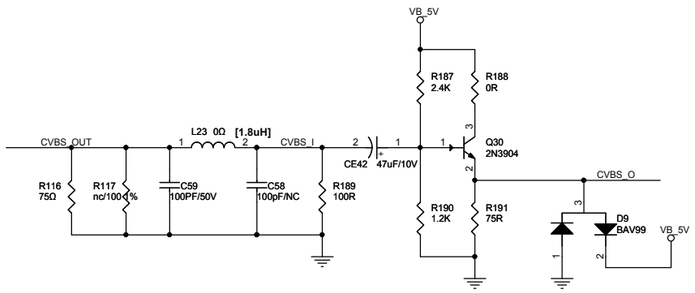
technician has used replacement parts specified
by the manufactruer or have the same
characteristics,as the original
parts
Unauthorized substitution may result in
fire,electric shock or other hazards
upon

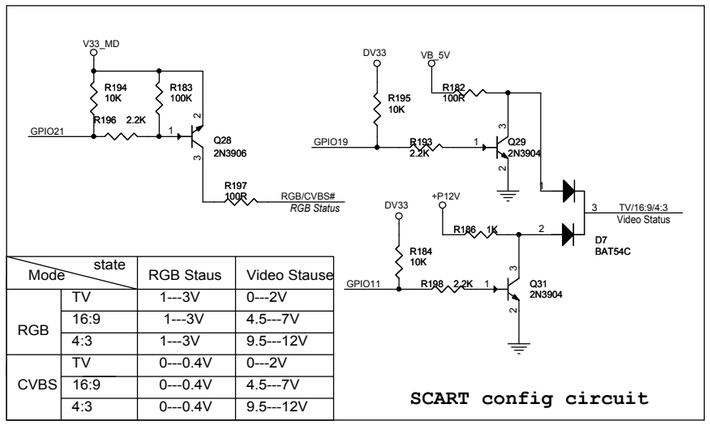
completion of any service or repairs this
product,Ask the service thechnician to perform
safety check to determinw that product is in
proper operatin condition



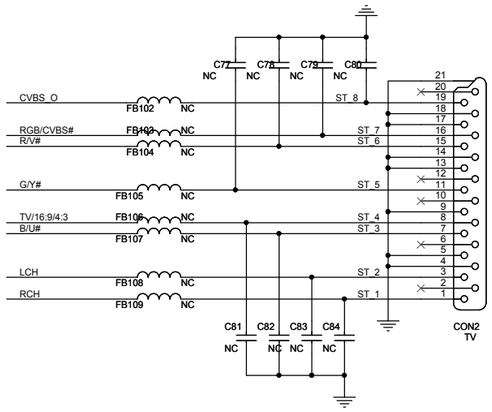




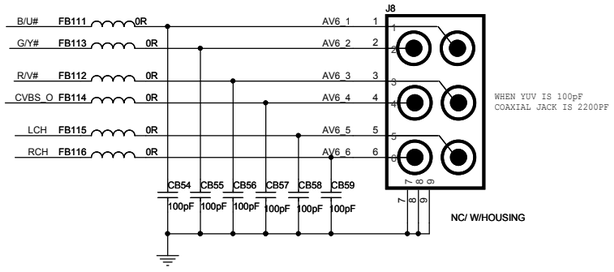


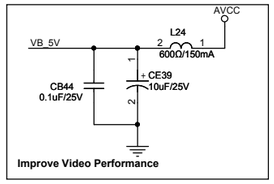


Mode	state	RGB Staus	Video Stause
RGB	TV	1---3V	0---2V
	16:9	1---3V	4.5---7V
	4:3	1---3V	9.5---12V
CVBS	TV	0---0.4V	0---2V
	16:9	0---0.4V	4.5---7V
	4:3	0---0.4V	9.5---12V

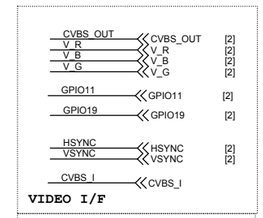


TV SCART OUT

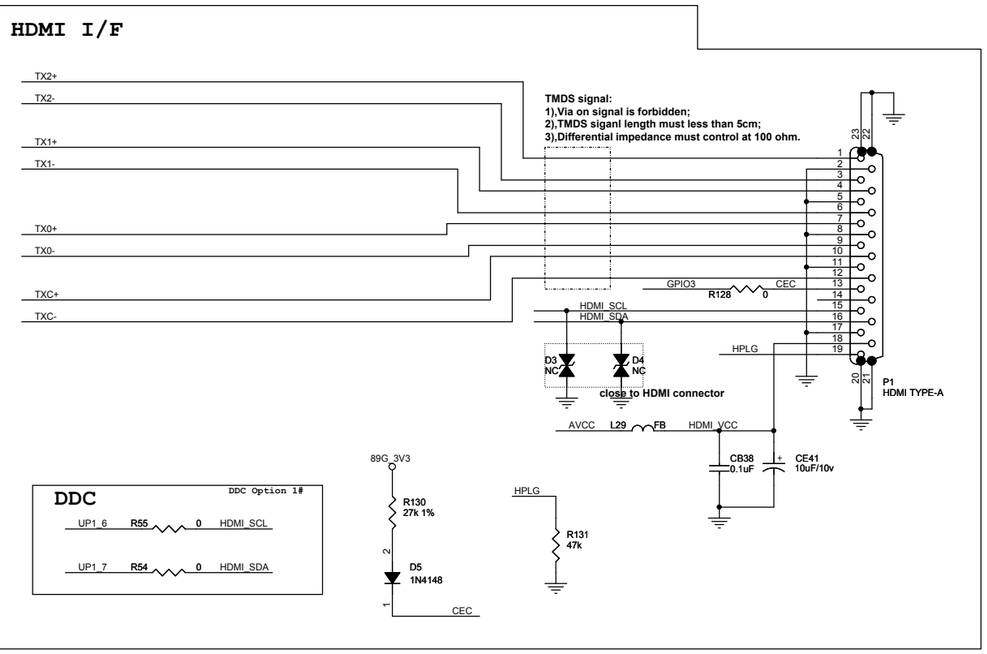


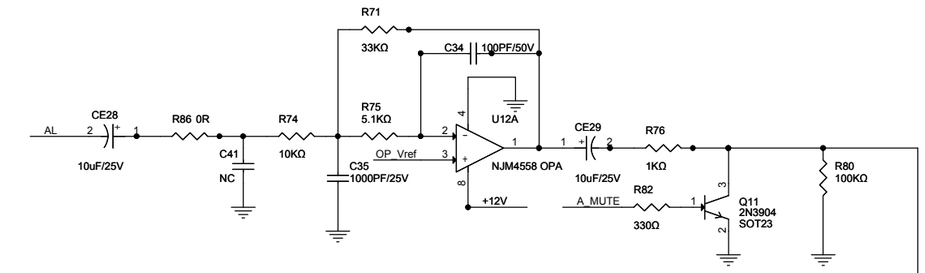


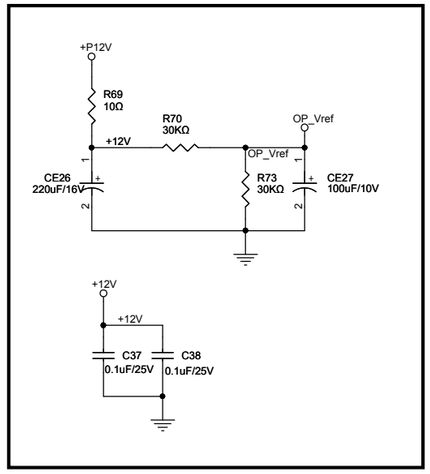
OFF-PAGE CONNECTION



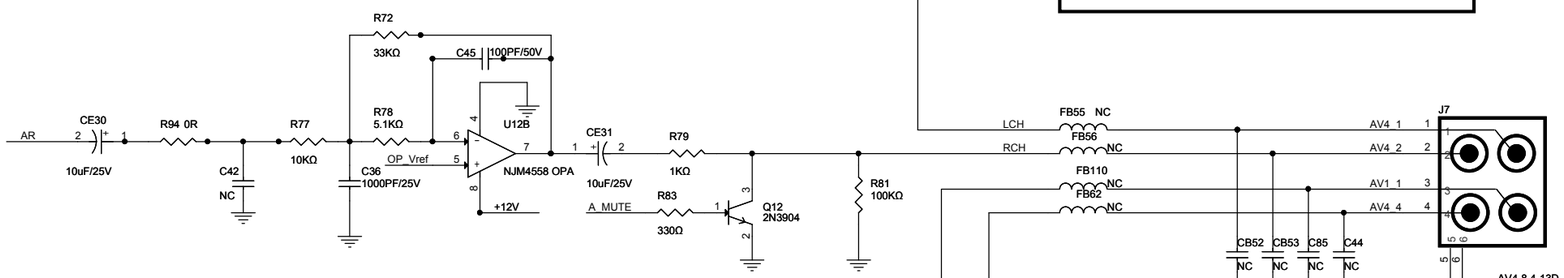
HDMI I/F

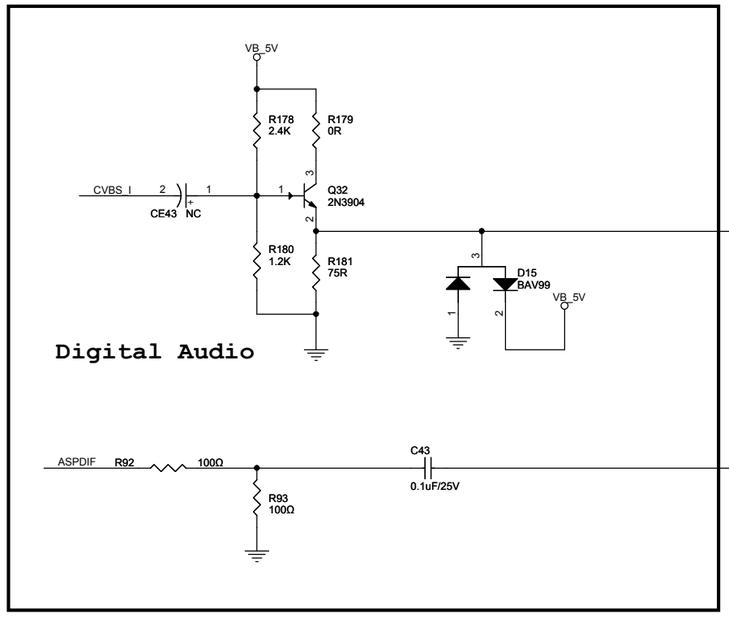


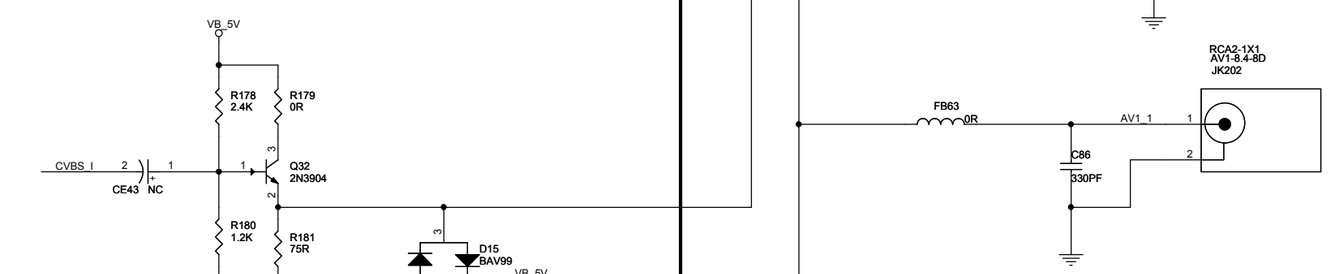


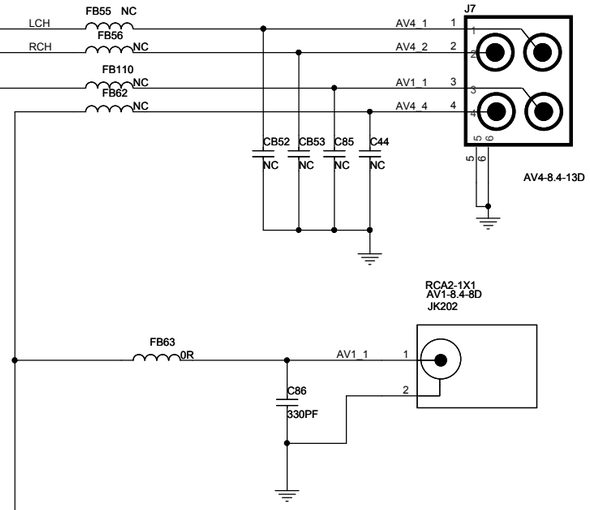


Audio OP









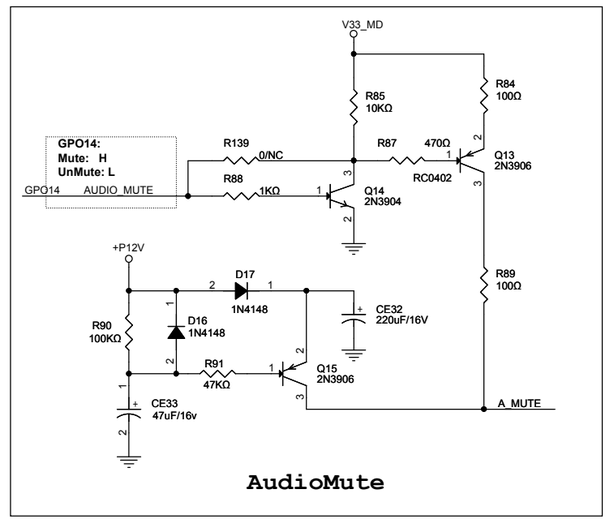
OFF-PAGE CONNECTION

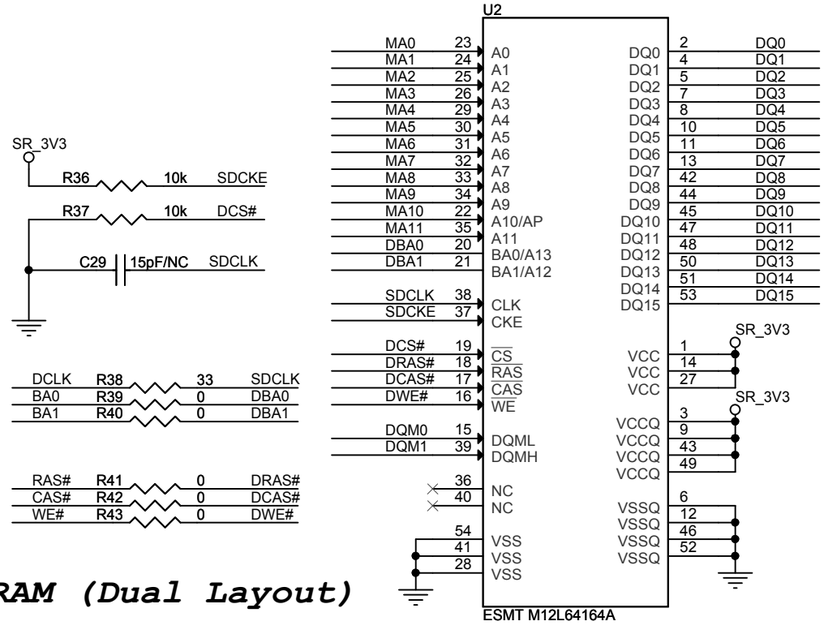
AR	AR	[2]
AL	AL	[2]
ASPDIF	ASPDIF	[2]
GPO14	GPO14	[5]
RCH	RCH	[5]
LCH	LCH	[5]

AUDIO I/F

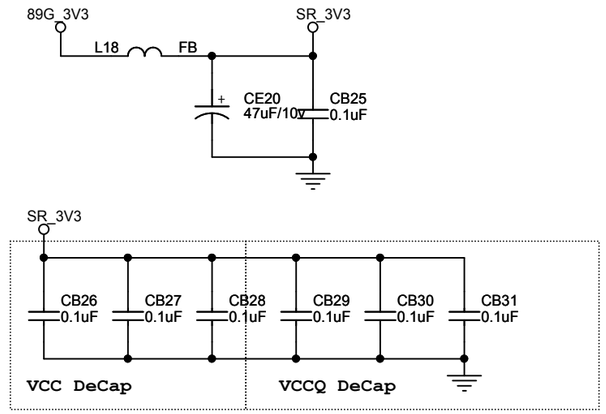
CVBS_I	CVBS_I	
+P12V	+P12V	[1]
DV33	DV33	[1,2,3,6]

Power

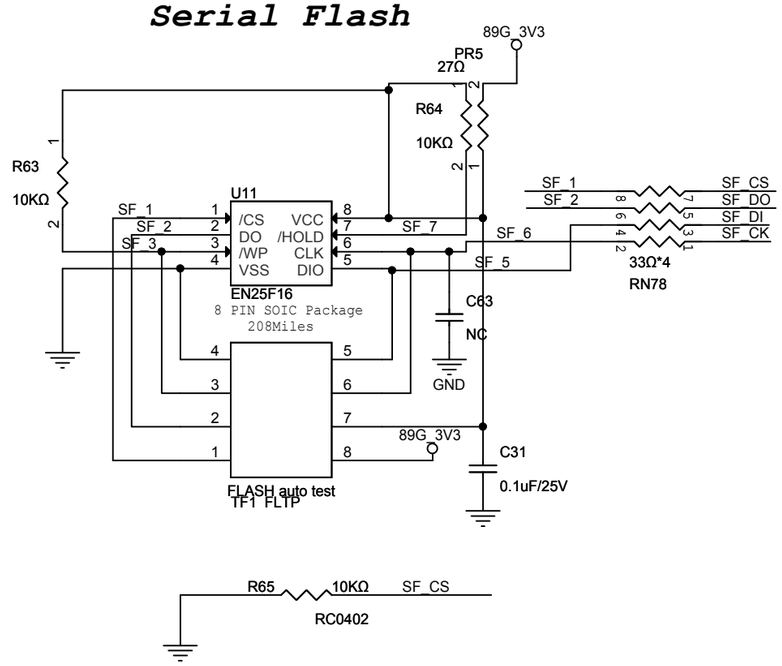


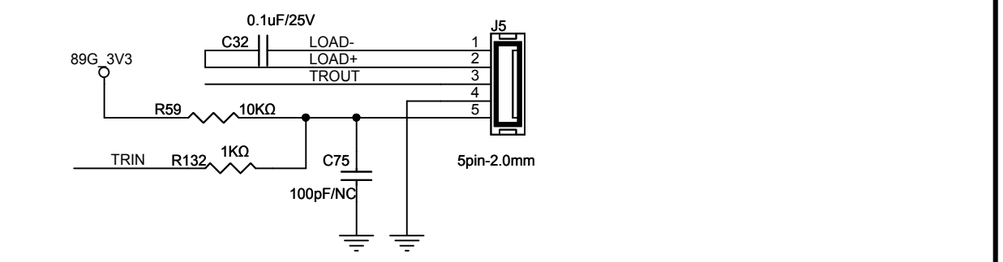


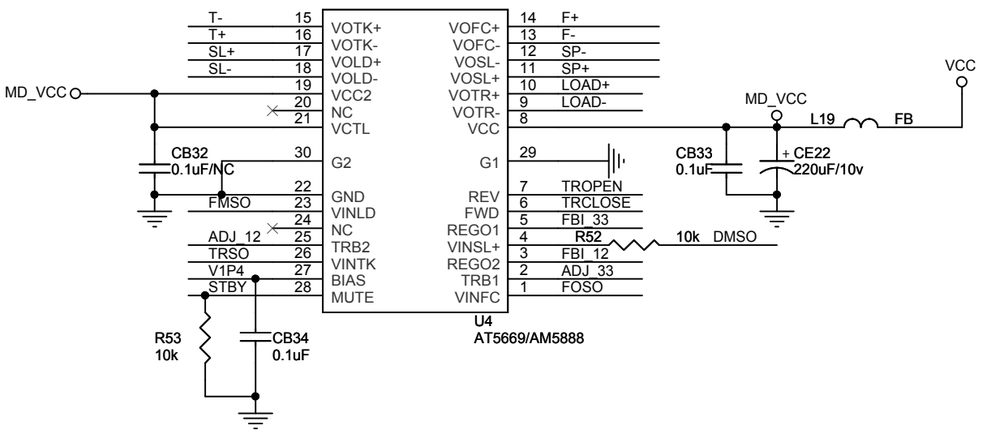
SDR_DRAM (Dual Layout)



Serial Flash







MotorDriver

OFF-PAGE CONNECTION

DQ[0..15] <<>> DQ[0..15] [3]
MA[0..11] << MA[0..11] [3]
DQM[0..1] << DQM[0..1] [3]
BA[0..1] << BA[0..1] [3]
DCLK << DCLK [3]
RAS# << RAS# [3]
CAS# << CAS# [3]
WE# << WE# [3]

DRAM I/F

SF_CK << SF_CK [3]
SF_CS << SF_CS [3]
SF_DI << SF_DI [3]
SF_DO << SF_DO [3]

S-FLASH

STBY << STBY [3]
TROPEN << TROPEN [3]
TRCLOSE << TRCLOSE [3]
TRIN << TRIN [3]
TROUT << TROUT [3]
T- << T- [3]
T+ << T+ [3]
F- << F- [3]
F+ << F+ [3]
SL- << SL- [3]
SL+ << SL+ [3]
SP- << SP- [3]
SP+ << SP+ [3]
FOSO << FOSO [3]
TRSO << TRSO [3]
FMSO << FMSO [3]
DMSO << DMSO [3]
V1P4 << V1P4 [3]

SERVO I/F

DV33 << DV33 [2,3,6]
VCC << VCC [2,3,5,6]
ADJ_12 >> ADJ_12 [2]
ADJ_33 >> ADJ_33 [2]
FBI_12 >> FBI_12 [2]
FBI_33 >> FBI_33 [2]

Power

OFF-PAGE CONNECTION

DQ[0..15] <<>> DQ[0..15] [4]
MA[0..11] <<>> MA[0..11] [4]
DQM[0..1] <<>> DQM[0..1] [4]
BA[0..1] <<>> BA[0..1] [4]
DCLK <<>> DCLK [4]
RAS# <<>> RAS# [4]
CAS# <<>> CAS# [4]
WE# <<>> WE# [4]

DRAM I/F

SF_CK <<>> SF_CK [4]
SF_CS <<>> SF_CS [4]
SF_DI <<>> SF_DI [4]
SF_DO <<>> SF_DO [4]

S-FLASH

UP1_[6..7] <<>> UP1_[6..7] [6]

IIC I/F

CVBS_OUT <<>> CVBS_OUT [6]
V_R <<>> V_R [6]
V_B <<>> V_B [6]
V_G <<>> V_G [6]

VIDEO I/F

AR <<>> AR [5]
AL <<>> AL [5]
ASPDIF <<>> ASPDIF [5]
GPIO21 <<>> GPIO21 [2]
GPIO14 <<>> GPIO14 [5]

AUDIO I/F

STBY <<>> STBY [4]
TROPEN <<>> TROPEN [4]
TRCLOSE <<>> TRCLOSE [4]
TRIN <<>> TRIN [4]
TROUT <<>> TROUT [4]
T- <<>> T- [4]
T+ <<>> T+ [4]
F- <<>> F- [4]
F+ <<>> F+ [4]
SL- <<>> SL- [4]
SL+ <<>> SL+ [4]
SP- <<>> SP- [4]
SP+ <<>> SP+ [4]
FOSO <<>> FOSO [4]
TRSO <<>> TRSO [4]
FMSO <<>> FMSO [4]
DMSO <<>> DMSO [4]
V1P4 <<>> V1P4 [4]

SERVO I/F

TXC+ <<>> TXC+ [6]
TXC- <<>> TXC- [6]
TX0+ <<>> TX0+ [6]
TX0- <<>> TX0- [6]
TX1+ <<>> TX1+ [6]
TX1- <<>> TX1- [6]
TX2+ <<>> TX2+ [6]
TX2- <<>> TX2- [6]
HPLG <<>> HPLG [6]
GPIO3 <<>> GPIO3 [6]

TMDS I/F

URST# <<>> URST# [2]
VCC <<>> VCC [2,4,5,6]
DV33 <<>> DV33 [2,4,6]
V12 <<>> V12 [2]
RFV33 <<>> RFV33 [2,4,6]
STBY_CTRL <<>> STBY_CTRL [ ]
AVCC <<>> AVCC [1,2,4,6]

Power

SP- R14 10k OP-
R15 1/0603 C2 0.1uF D1 BAT54C 89G_3V3
C3 0.1uF
SP-A R17 10k OPO
SOT23

DV33 6pin-2.0mm
SP-A 6
SP+ 5
R18 10k LIMIT 4
3
SL- 2
SL+ 1
J2

1	F-
2	F+
3	T+
4	T-
5	C/c
6	D/d
7	CD/DVD SW
8	RF
9	A/a
10	B/b
11	F
12	GND-PD
13	Vc(Vref)
14	Vcc
15	E
16	NC
17	VR-CD
18	VR-DVD
19	CD-LD
20	MD
21	HFM
22	NC
23	DVD-LD
24	GND-LD

SERVO option 1# :
[No Gxyz, remove VR circuit]

GPIO34 R19 0 TROPEN IOA
R46 6.8K
GPIO35 R20 0 STBY
R22 0
PIN14 R23 0 VR_CD
PIN15 VR_DVD

V12
Importance. layout close to IC pin.
V12 L4 FB RFV12-1 CB7 4.7uF
CB8 0.1uF
CE23 100uF/6.3V
L10 12R RFV12-2 CB35 4.7uF
CB45 0.1uF
CE25 100uF/6.3V
SERVO RF DeCAP.

USB_5V
USB_DP R174 1 2 0Ω
USB_DM R175 1 2 0Ω
J3 4P/2.0MM
CB43 0.1uF/25V
D11 NC D12 NC
close to USB connector
USB I/F

89G_3V3 L8 FB RFVDD3 C4 10uF/10v C5 0.1uF

ADACVDD L5 FB/200ohm V33_MD
DACVDD3 L6 FB L7 100uH AADVDD
CB9 0.1uF CB10 0.1uF CE9 10uF/10v
C6 6800pF CE10 470uF/10v

Crystal
R16 100k
XI Y1 XO
27MHz
C7 27pF C8 27pF
L9 FB
Put these circuits as closer as possible to MT1389

close to IC pin.
C9 0.1uF C10 4.7uF CE11 470uF/10v
C13 220pF/NC RFO
C14 1uF RFV12-1
C12 10uF/10v
C11 10uF/10v C11 0.1uF CB11
R21 560 close to IC pin.

GPIO11 <<>> GPIO11 [2]
GPIO19 <<>> GPIO19 [2]

GPI36 LIMIT TROUT
GPO5 TRCLOSE

U1
E F D A B C OPI OPO GPI36 RFO RFV12-1 ADACVDD AL AR GPIO35 GPIO34 AADVDD GPIO21 GPIO20 GPIO19 V_R V_B V_G DACVDD3 CVBS_OUT
129 128 127 126 125 124 123 122 121 120 119 118 117 116 115 114 113 112 111 110 109 108 107 106 105 104 103 102 101 100 99 98 97 134 133 132 131 130

	E-PAD/GND	1	RFV12-2
RFF		2	RFVDD3
RFE		3	XI
RFD		4	XO
RFC		5	V20
RFB		6	V1P4
RFA		7	GPO5
RFH / OPINN		8	MDI1
RFG / OPINP		9	LDO1
RFIN / OPOUT / GPI36		10	LDO2
RFP		11	AVDD33
AVDD12		12	DMO
ADACVDD2		13	FMO
ADACVDD1		14	PIN14
CENTER / GPIO		15	PIN15
ALS / GPIO		16	TRO
AL / GPIO		17	FOO
AVDD		18	TRIN
AR / GPIO		19	USB_DP
ARS / GPIO		20	USB_DM
LFE / GPIO		21	USB_V33
PAD_APLLCAP / GPIO35		22	
APLLVDD_GPIO / GPIO34		23	USB_V12
AADVDD		24	SF_CS
AKIN1 / GPIO21		25	SF_DO
ADVCM / GPIO20		26	SF_DI
AKIN2 / GPIO19		27	SF_CK
R		28	UP1_6 / SCL
B		29	UP1_7 / SDA
DACVDD3		30	GPIO11
CVBS		31	GPIO6
FS		32	URST#
G5		33	IR
G4		34	GPIO3 / INT#
G3		35	GPIO4
G2		36	GPIO13
G1		37	GPIO9
		38	GPIO8
		39	GPIO7 / CKE
		40	DVDD33
		41	RD0
		42	RD1
		43	RD2
		44	RD3
		45	RD4
		46	RD5
		47	RD6
		48	RD7
		49	DQM0
		50	DQI5
		51	RD14
		52	DVDD12
		53	RD13
		54	RD12
		55	RD11
		56	RD10
		57	RD9
		58	RD8
		59	DQM1
		60	RCLK
		61	MA11
		62	MA9
		63	MA8
		64	MA7

VREF / GPO14		96	GPO14
DACVDDC		95	DACVDD3
TX2P		94	TX2+
TX2N		93	TX2-
AVDD12_D		92	
TX1P		91	TX1+
TX1N		90	TX1-
AVSS12		89	
TX0P		88	TX0+
TX0N		87	TX0-
AVDD12_C		86	
TXCP		85	TXC+
TXCN		84	TXC-
AVDD33_12		83	
EXT_RES		82	
GPIO10 / HPLG		81	HPLG
SPDIF / GPIO12		80	ASPDIF
DVDD12		79	
RA3		78	MA3
RA2		77	MA2
RA1		76	MA1
RA0		75	MA0
RA10		74	MA10
BA1		73	BA1
BA0		72	BA0
DVDD33		71	
RAS#		70	RAS#
CAS#		69	CAS#
RWE#		68	WE#
RA4		67	MA4
RA5		66	MA5
RA6		65	MA6

MT1389G
LQFP 128
V1.0

MT1389G 1389M

C15 0.1uF/NC close to IC pin
L25 FB CB13 0.1uF CE13 4.7uF/6.3v
L26 FB CB18 0.1uF
R27 2.5K 1% CB15 0.1uF CE15 4.7uF/6.3v
L11 FB L13 FB
Q7 CES2302 SOT23
V12 89G_3V3 VCC

89G_3V3 R35 4.7k
Default #1 GPIO11 RXD
89G_3V3 R47 4.7k
Default #1 GPIO6 TXD

FOSO R31 27k FOO
TRSO R32 27k TRO
FMSO R33 15k FMO
DMSO R34 10k DMO
C22 330pF C23 330pF C24 0.1uF C25 0.015uF V1P4

C33 100pF 89G_3V3 V12

HA1 24pin-0.5mm
24 23 LD-DVD 22 21 AVCC1 20 MDI1 TP9 19 LD-CD 18 17 16 15 E 14 AVCC1 13 V20 CB14 0.1uF/25V 12 11 F 10 B 9 A 8 RFO 7 IOA 6 D 5 C 4 T- 3 T+ 2 F+ 1 F-
TOP
C21 120pF/NC
26 25

VR_DVD VR_CD
R29 0Ω R30 0Ω
AVCC
0.1uF/25V C16 L12 120Ω/500mA CE14 100uF/10V
Very Important to reduce Noise

L17 0R
L20 0R
Q4 C8550 LDO2
CE17 47uF/16V
R56 4.7Ω R58 4.7Ω RFV33
CE16 47uF/16V
Q8 C8550 LDO1

VCC R199 1.8K R200 1.8K
UP1_6 I2C_CLK
UP1_7 I2C_DAT

FOR Indian version
89G_3V3 BC1 0.1uF/25V
U13 A0 A1 A2 GND VCC WP SCL SDA
I2C_CLK I2C_DAT
NC/24C02

89G_3V3
XI R24 51 3
XO R25 51 4
R26 15k/NC 7
C17 4.7uF C18 0.1uF 89G_3V3
V33_MD CB16 0.1uF L14 FB C19 10uF/10v USB_DM
R28 5.1k 1% RVFC USB_V33
Rvrt close to IC
V12 L15 FB C20 10uF/10v CB17 0.1uF

V12 CB23 0.1uF CB24 0.1uF
89G_3V3 CB21 0.1uF CB22 0.1uF

Chip Decap.

V20 CB19 0.1uF CE18 47uF/10v
V1P4 CB20 0.1uF CE19 47uF/10v
RF Reference

RS-232
GPIO11 need to pull-up.
89G_3V3 PF1 RxD TxD 4x1 W/HOUSING

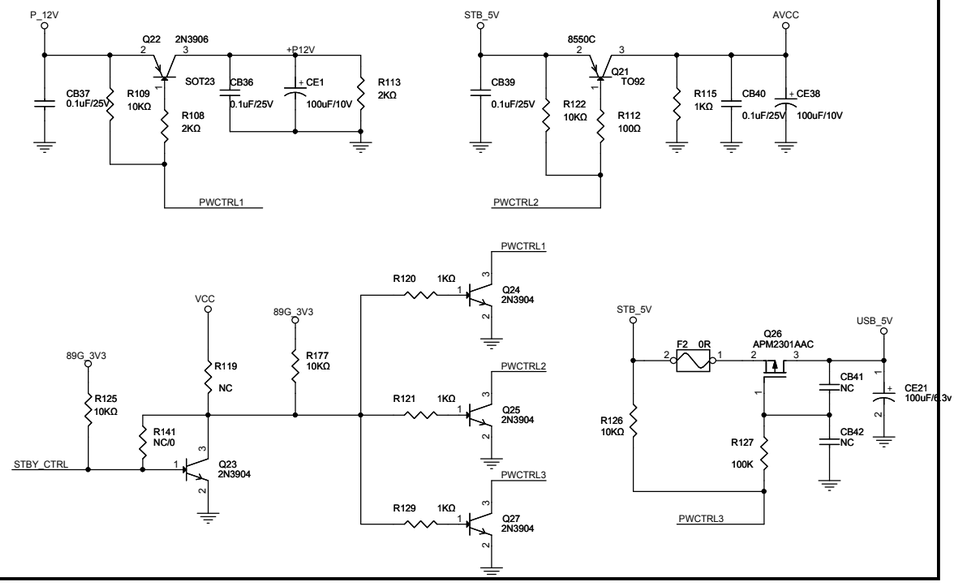
VFD
GPIO4 VSCK
GPIO7 VSDA
GPIO13 VSTB
C26 100pF C27 100pF C28 100pF
VCC STB_5V
R173 4.7KΩ R45 4.7KΩ R44 4.7KΩ R49 4.7KΩ
CON1 R57 10Ω
1 L31 0R IR
2 L37 0R VSTB
3 L38 0R VSCK
4 FB50 0R VSDA
5 FB53 0R STB_5V
6 GND
7 STB_KEY FB54 0R GPIO9
8 STB_LED FB52 0R GPIO8
8pin-2.0mm
CB46 NC CB47 NC CB48 NC CB49 NC CB50 NC CB51 NC
GND
EC39 100uF/10V R172 nc/4.7K
GND STB_5V

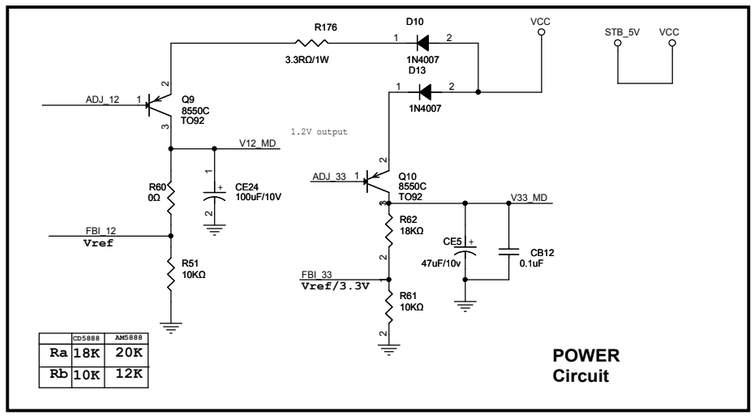
COMMON1389G_HD65_AT5669_V1.1

MT1389G (LQFP128) DVD Board w/ Sanyo HD6x Series PUHs

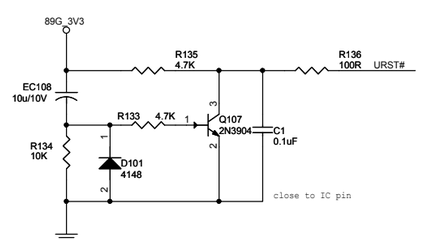
Rev	History	P#	Date
V1	Original release		2008.09.25
V1.1	1),Modify CE31 from 47uF to 220uF for power noise improve; 2),Add 100 ohm resistance R160 and R161 to XI and XO nets for tune DPD performance; 3),Delete Q11 for costdown; 4),change L8 from 100uH to FB/200ohm.		2009.02.17

Standby Power Control





RESET Circuit



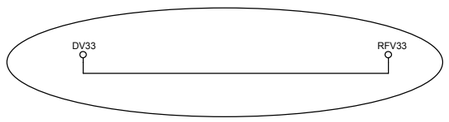
MT1389G 128 PIN GPIO LIST

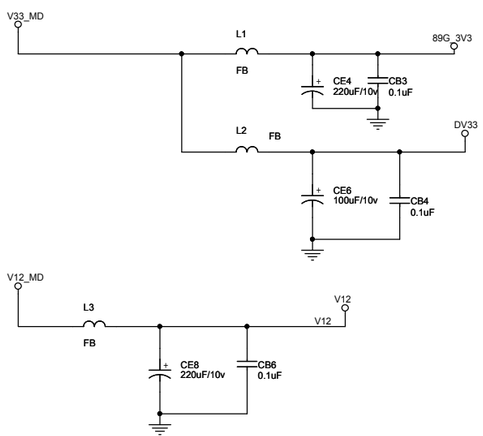
NAME	PIN	FEATURES
TRAY_OPEN	14	VR_CD [STBY]
TRAY_CLOSE	15	VR_DVD [TROPEN; IOA]
FG / GPIO2	18	TRIN
UP1_6	28	HDMI_SCL
UP1_7	29	HDMI_SDA
GPIO3	34	CEC
GPIO4	35	VSCK [Gxyz_LOAD]
GPO5	7	TRCLOSE
GPIO6	31	VSDA TxD [Gxyz_CLK]
GPIO7	39	SD_CLK MS_CLK
GPIO8	38	SD_CMD MS_BS
GPIO9	37	SD_DATA MS_DATA
GPIO10	81	HPLG
GPIO11	30	SCART1 HSYNC# RxD
GPIO12	80	ASPDIF
GPIO13	36	VSTB
GPO14	96	A_MUTE
GPIO19	103	SCART2 VSYNC#
GPIO20	104	AVCM
GPIO21	105	AKIN1
ARF	109	AUDIO_ARF
ARS	110	AUDIO_ARS
ALS	114	AUDIO_ALS
ALF	115	AUDIO_ALF
GPIO34	107	TROPEN IOA [Gxyz_D1#]
GPIO35	108	STBY [Gxyz_D2#]
RFIN / OPOUT	120	LIMIT TROUT

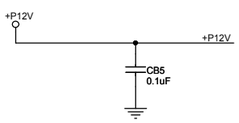
OFF-PAGE CONNECTION

URST#	URST#	[3]
+P12V	+P12V	[5]
VCC	VCC	[3,4,5,6]
DV33	DV33	[3,4,6]
ADJ_12	ADJ_12	[4]
ADJ_33	ADJ_33	[4]
FBI_12	FBI_12	[4]
FBI_33	FBI_33	[4]
RFV33	RFV33	[3,4,6]
V12	V12	[3]
STBY_CTRL	STBY_CTRL	]
AVCC	AVCC	[1,2,4,6]

Power

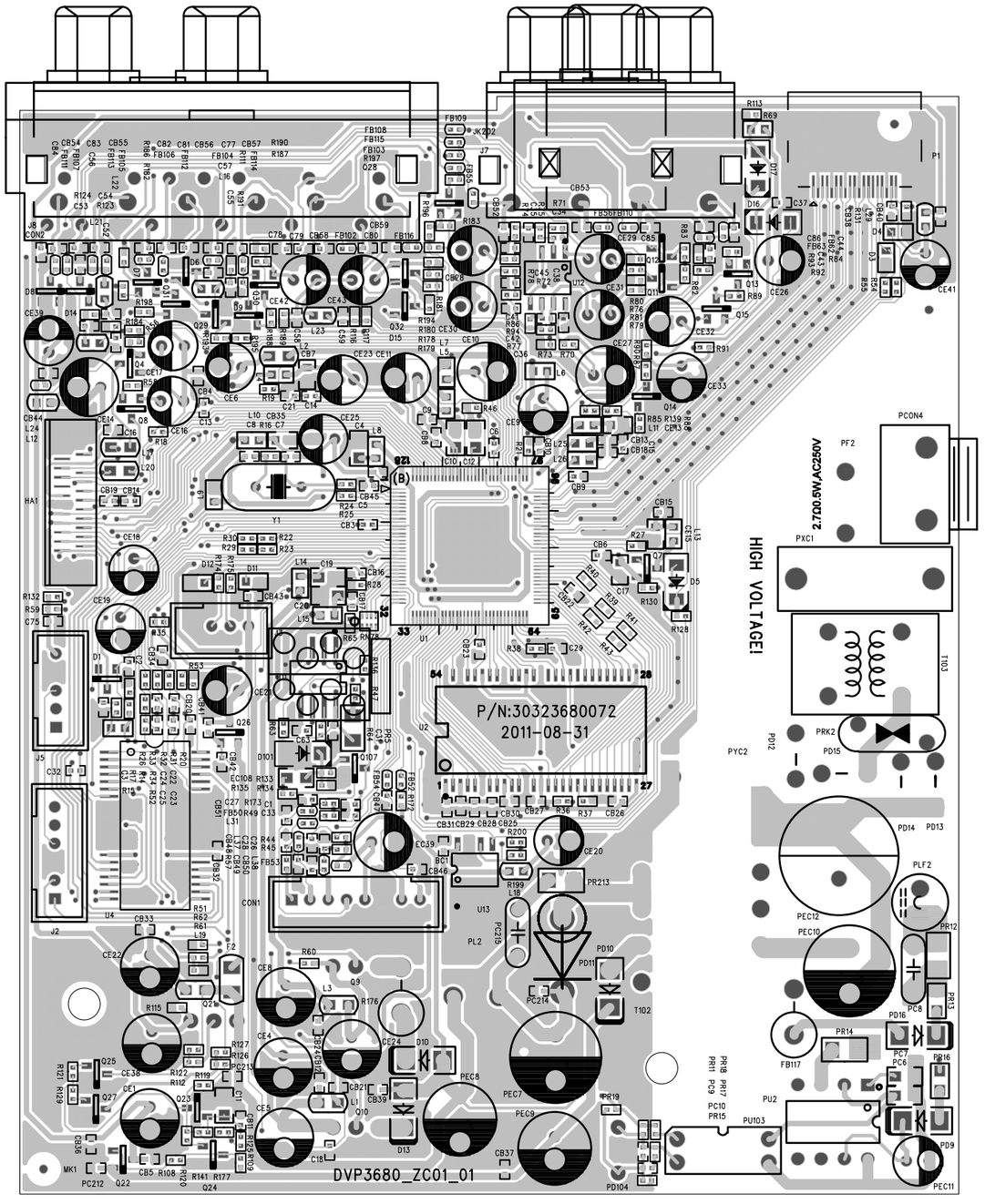


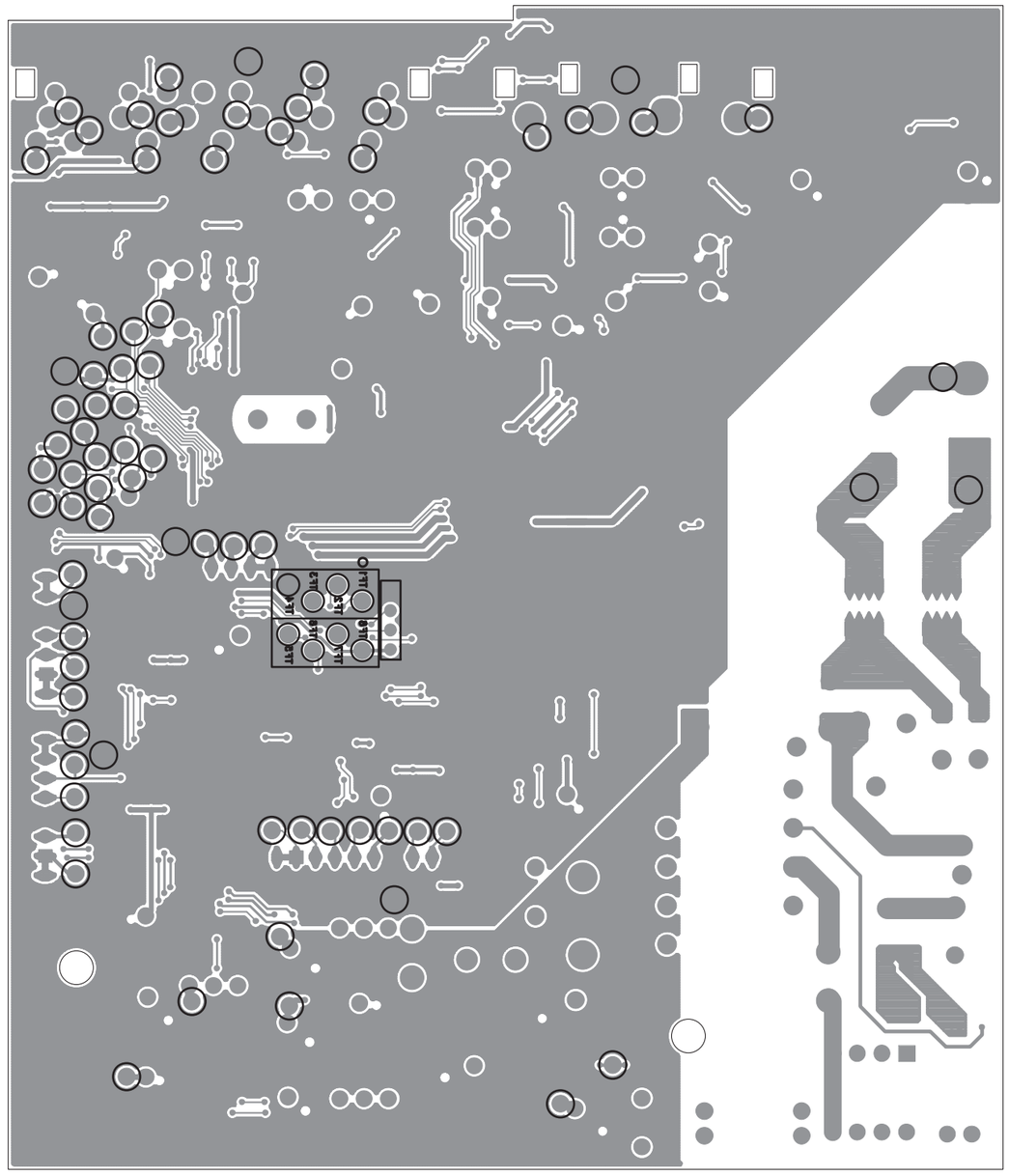




4 - 7

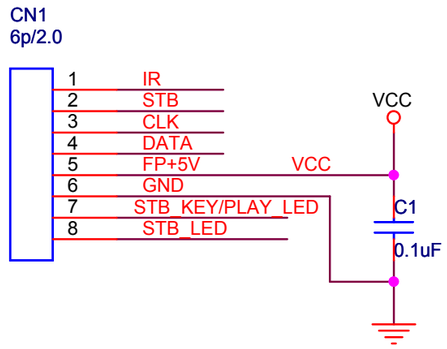
LAYOUT DIAGRAM - MAIN BOARD

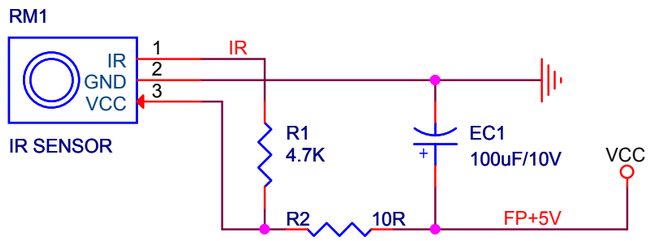


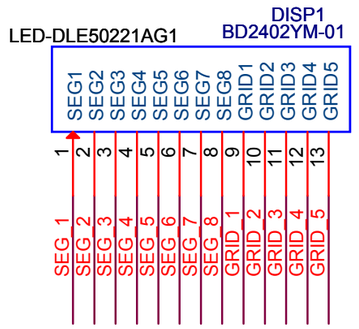


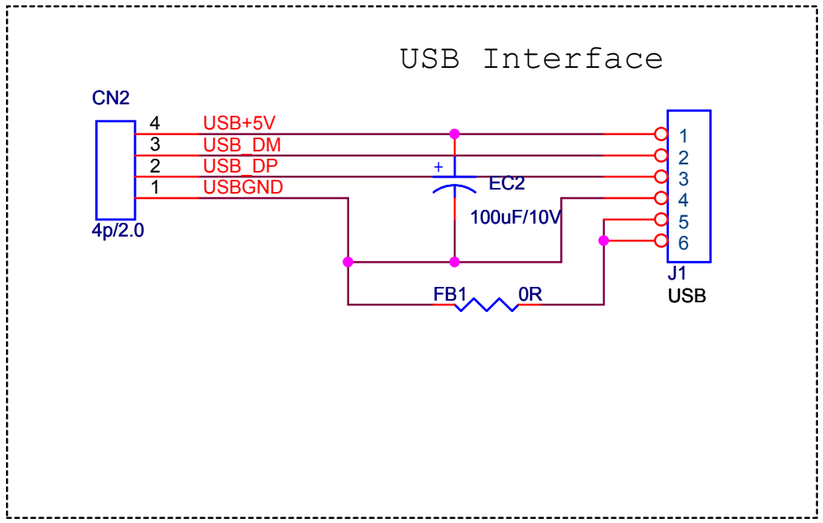
5 - 1

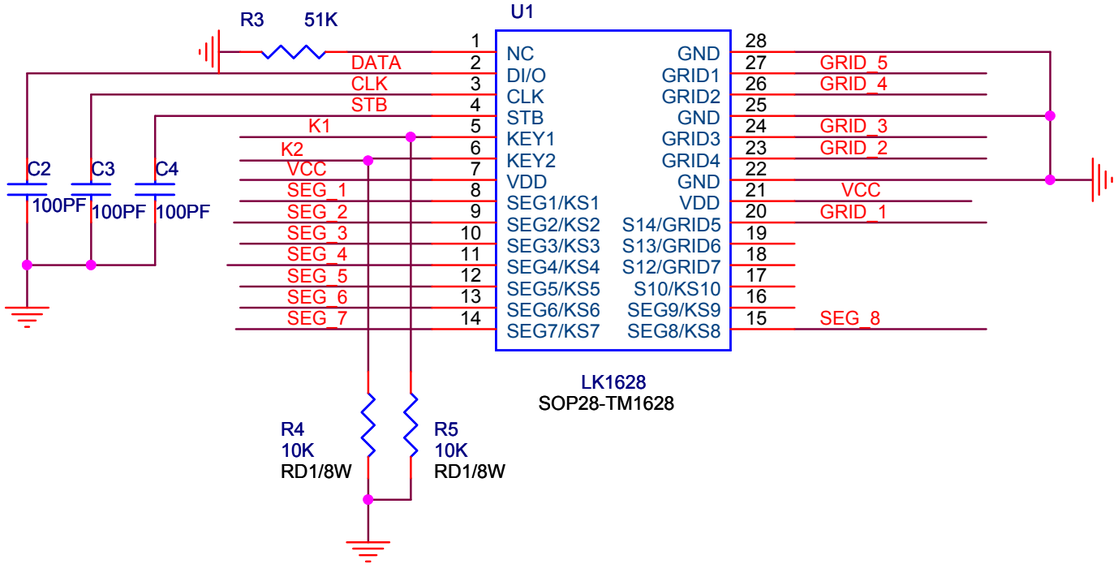
CIRCUIT DIAGRAM - FRONT PANEL BOARD

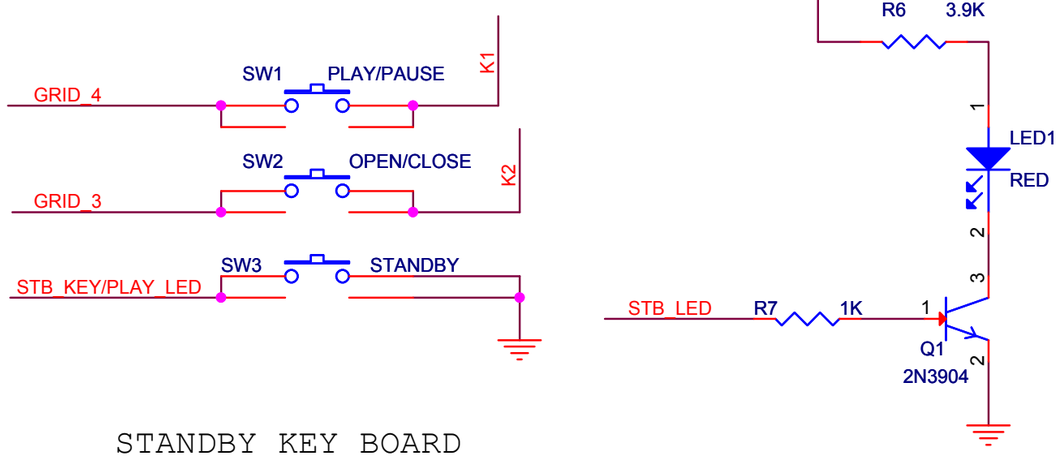








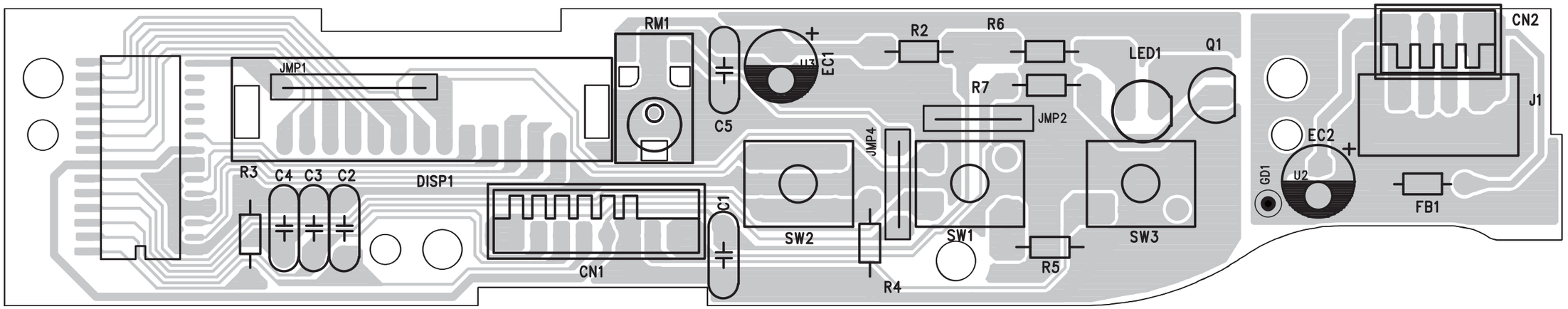




STANDBY KEY BOARD

5 - 2

LAYOUT DIAGRAM - FRONT PANEL BOARD



6 - 1

EXPLODED VIEW DIAGRAM